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A MONOGRAPH OF THE GENUS MALVASTRUM - III¹

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Section 6. *Malvastrum*

Malvastrum sectio **Malvastrum**, *emend.* S. R. Hill.

Carpella matura 9–16, indehiscentia vel dehiscentia margine proximali-apicale leviter, superficie apicale pilis simplicibus et pilis stellatis minutis, muris lateralis pericarpium crassis, ornata 2 cuspidibus distali-apicalibus 0.1–1.1 mm longis et cuspe unico mediali-apicale 0.2–2.3 mm longo; marginibus pericarpium angulatis; endoglosso nullo; stamina 16–49, columnis staminalibus glabris; flores solitarii axillares vel in racemis terminalibus vel in racemis glomeratis axillaribus; bracteolis involucellis adnatis basi calyce vulgo; bractee florales bifidae nullae vulgo vel praesentes; pilis caulinis stipitatis numquam; pollinis grana 15–32 aperturis. TYPUS: *Malvastrum wrightii* A. Gray [= *M. aurantiacum* (Scheele) Walpers].

The solitary axillary or racemose flowers, indehiscent or weakly dehiscent thick-walled tricuspidate mericarps, lack of an endoglossum, presence or absence of bifid floral bracts, glabrous filament tube, and 15–32 aperturate pollen characterize the section *Malvastrum*.

¹This concludes the monograph. Parts I and II were published in the January and April issues of Volume 84 (1982).

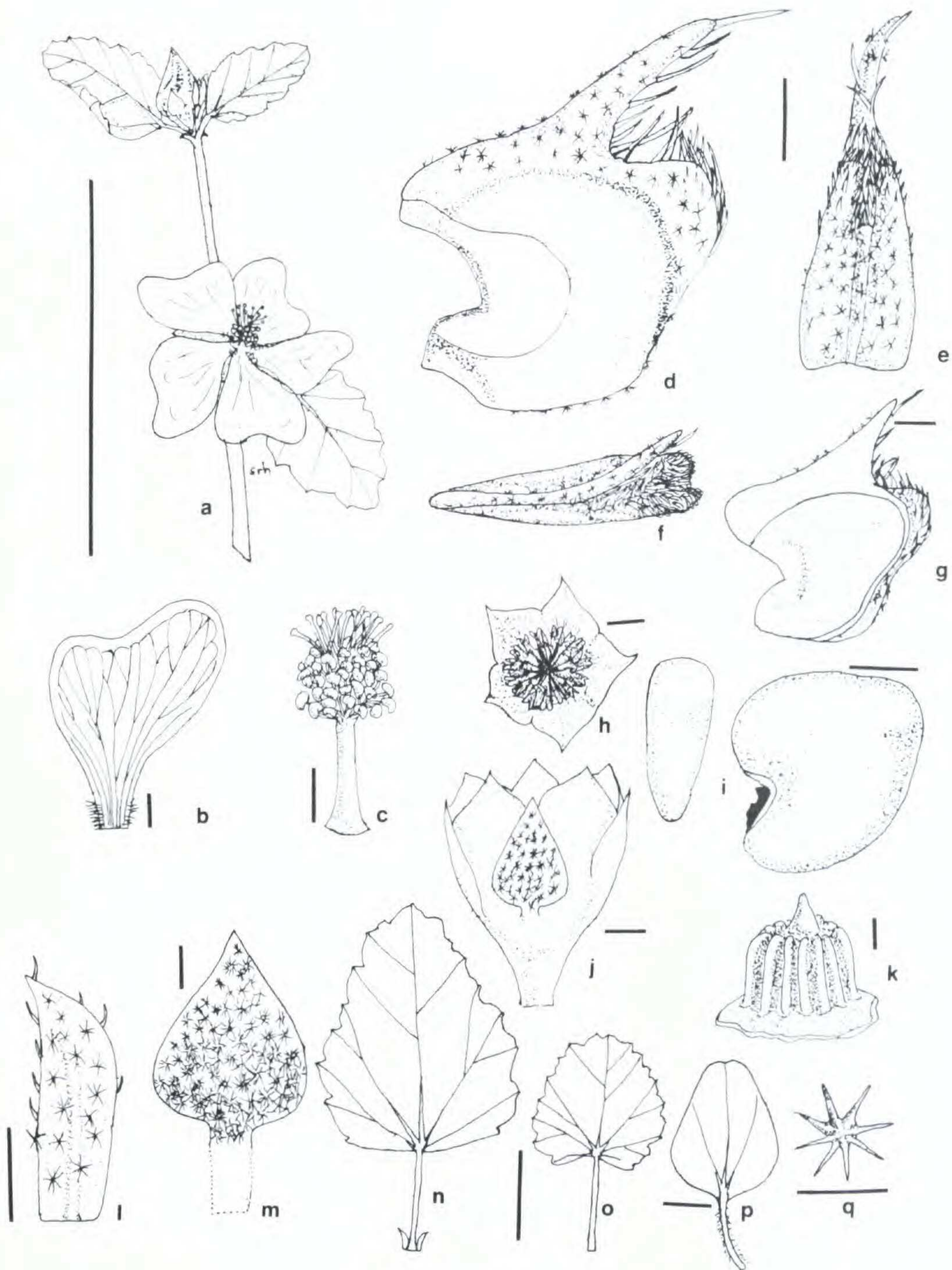
12. **Malvastrum aurantiacum** (Scheele) Walpers, *Annales* 2: 153. 1851. Fig. 60, 61.

Malva aurantiaca Scheele, *Linnaea* 21: 469. 1848. TYPE: UNITED STATES. Texas: black clay, moist prairie, Muskit (Mesquite) flats near New Braunfels, July, 1846. *F. Lindheimer* 240 (distributed by A. Gray in Fascicle III under the number 350) (LECTOTYPE: GH! (Berlin type lost); ISOTYPES: G!, GH!, GOET!, K!, MO!, NY!, OXF!, PH!, UC!, US!). *Malveopsis aurantiaca* (Scheele) O. Kuntze, *Rev. Gen* 1: 72. 1891.

Malvastrum wrightii A. Gray, *Mem. Amer. Acad. Arts* n.s. 4: 21, in adn. 1849. TYPE: UNITED STATES. Texas: *C. Wright* s.n. (LECTOTYPE: GH!; ISOTYPES: F!, NY!). *Sphaeralcea wrightii* sensu Metz, *Catholic Univ. Amer. Biol. Ser.* 16: 142. 1934, non Gray, 1853.

Suffruticose perennial colonial herb 0.4–1.0 m tall from a woody caudex and an elongate thickened taproot that is pale salmon-red internally, with several sparsely branched lax and ascending main stems; *main stems* (2) 4–6 mm diam at base; *branches* when present 15–40 cm long; *vesture* of appressed (6) 8–10-rayed stellate-lepidote hairs 0.2–0.8 mm diam; *cotyledons* 12–18 mm long $\times$ 10–12 mm wide, ovate, apex retuse, base rounded, palmately 3-nerved; *stipules* (2) 4–6 (9) mm long $\times$ 1.0–1.5 mm wide, lanceolate, acute, somewhat falcate; *petioles* (5) 10–25 (45) mm long; *blades* (1) 1.7–2.2 (3) $\times$ longer than the petioles, (18) 30–40 (55) mm long $\times$ (10) 15–30 (45) mm wide, average midstem blade 1.4–1.6 $\times$ longer than wide, ovate to wide-ovate, unlobed or very infrequently with two obscure lateral lobes half the distance from the rounded slightly cordate to truncate base, apex rounded, margin crenate-dentate with 1.5–3 teeth/cm, vesture of the adaxial surface of scattered appressed 6–8-rayed stellate to stellate-lepidote hairs 0.2–0.8 mm diam similar to those of the stem, abaxial pubescence dense with similar hairs; *flowers* soli-

Figure 60. **Malvastrum aurantiacum**. **a.** Habit, scale = 5 cm. **b.** Petal, scale = 2 mm. **c.** Stamens, styles and stigmas, scale = 2 mm. **d.–f.** Mericarp, lateral, distal, and apical views, scale = 1 mm. **g.** Mericarp, internal view, scale = 1 mm. **h.** Fruit, apical view, scale = 5 mm. **i.** Seed, apical and lateral views, scale = 1 mm. **j.** Calyx in bud, vesture of bracteole indicated, scale = 2 mm. **k.** Columella and carpocrater, scale = 0.5 mm. **l.** Stipule, abaxial surface, scale = 2 mm. **m.** Bracteole, scale = 2 mm. **n.** Midstem leaf, scale = 2 cm. **o.** Basal leaf, scale = 2 cm. **p.** Cotyledon, scale = 0.5 mm. **q.** Sub-lepidote (stellate-lepidote) hair, scale = 0.5 mm. (a,g-i, p from *Hill* 6430; b-c,j,l, from *Hill* 5302, d-f from *Lindheimer* 240(350); k from *hill* 6112; m,o,q from *Fryxell* 1314; n from *Fryxell* 2947).



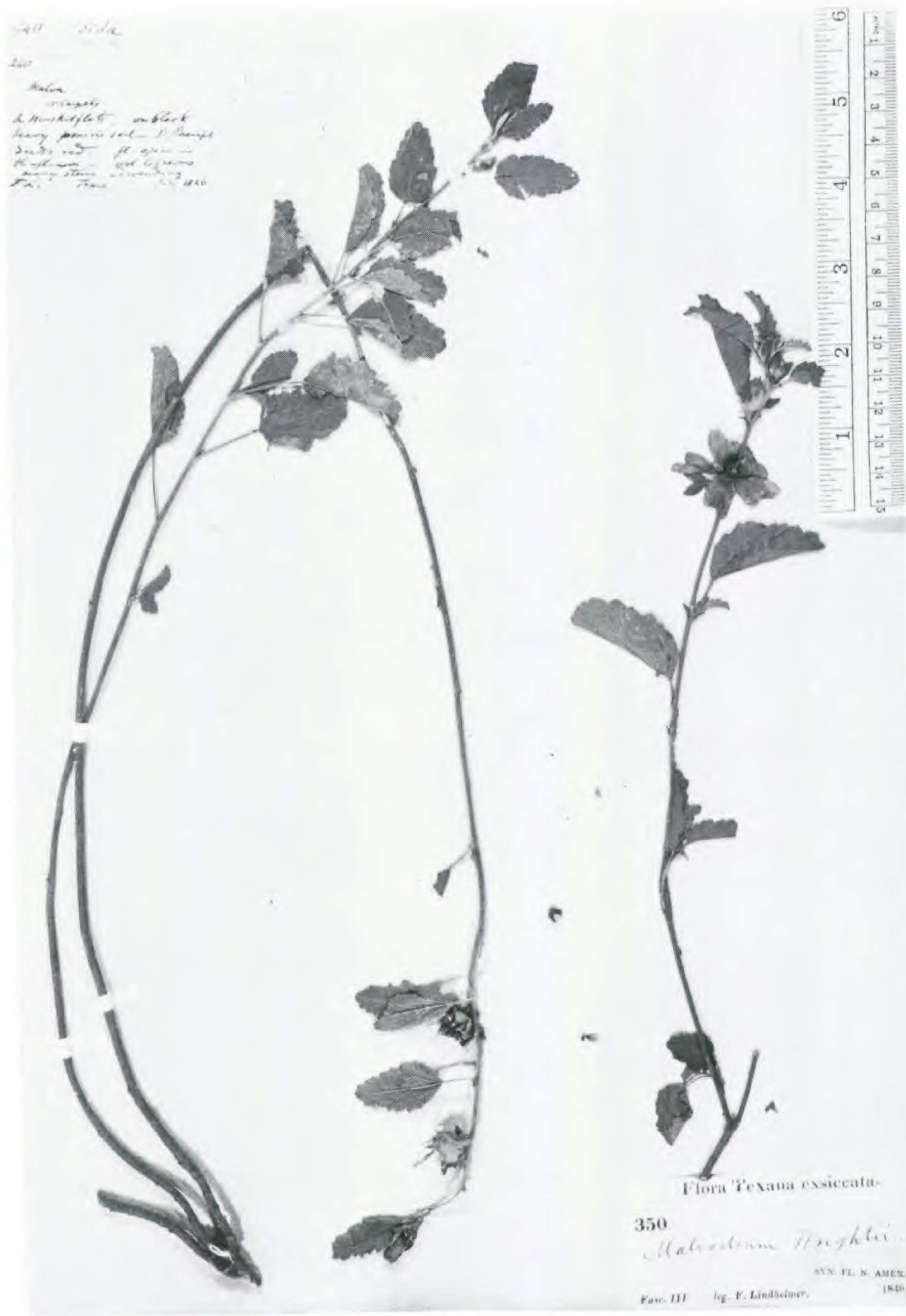


Figure 61. *Malvastrum aurantiacum* (lectotype, GH).

tary in axils of well-developed leaves and stipules; *floral bracts* absent; *pedicels* 3.0–5.0 (10) mm long increasing by 2 mm in fruit; *involucel* of 3 bracteoles 8.0–9.0 (10.0) mm long $\times$ 3.0–5.0 mm wide, deltate-cordiform in the upper 4–6 mm and acute, abruptly narrowed and fused to the calyx in the lower 2–3 mm; *calyx* united 1/3 to 1/2 its length, 11–12 mm from pedicel to lobe apex, increasing to 13–17 mm in fruit, broadly campanulate, the lobes erect to slightly spreading, deltate, slightly auriculate at the base giving the bud a deeply angled appearance, acute to slightly acuminate, 7–8 mm long $\times$ 5–6.5 mm wide in flower to 9–10 mm long $\times$ 7–9 mm wide in fruit, vestiture of the abaxial surface (similar to that of the bracteoles) scattered at apex becoming dense at base, adaxial surface of lobes downy pubescent in upper 2/3 and along the margins with minute simple arachnoid hairs; *corolla* golden-yellow to pale orange-yellow, petals conspicuously asymmetrically bilobed, (12) 15–16 mm long $\times$ 10–13 (15) mm wide, rotate at anthesis, exceeding calyx by 7–8 mm, claws densely pubescent on their margins with fine simple hairs 0.5–1.0 mm long; *androecium* with (28) 39–49 stamens, filament tube 4.0 mm long, glabrous, free portion of filaments 2.0 mm long, anthers 1.0 mm long $\times$ 0.8 mm wide after dehiscence; *gynoeceium* with 12–16 loosely coherent carpels, style branching 4 mm above the columella, each branch terminated by a subglobose expanded stigma raised above the anthers 2.0–2.5 mm recurved at flower wilt, ovary surface densely pubescent with long rigid erect simple hairs 1–1.5 mm long; *schizocarps* 9–10 mm diam, raspberry-red and firm at first drying to tan or dark brown; *mericarps* (12) 14 (16), (4) 6 mm in height $\times$ (4) 5 (6) mm in length $\times$ 1.0–1.5 mm in width becoming slightly narrower apically, with a prominent distally directed medial-apical cusp 1.5–2.3 mm long, with two distal-apical contiguous flattened cusps 1.0–1.1 mm long, lateral surface unribbed, distal surface with an obscure medial line, vestiture of both erect and appressed rigid simple hairs 1.0–1.2 mm long restricted to the distal surface of the apical cusps, with minute stellate hairs 0.1–0.2 mm diam throughout the upper third of the mericarp and along the distal surface, mericarp indehiscent, texture firm and woody, and proximal-apical region thin and solid, endoglossum lacking, readily separating from the receptacle at maturity; *seeds* 2.5–3.0 mm in height $\times$ 2.0–2.5 mm in length $\times$ 1.0–1.3 mm in width, considerably smaller than the mericarp chamber, with a slight bulge in the apical-distal region corresponding in position with the distal

cusps of the mericarp; *chromosome number*: $n = 18$, $2n = 36$; *pollen* 79.4–115.7 (99.7) μm diam, echinae (4) 7–10 μm , apertures 15–20.

Distribution. (Fig. 62). Restricted to heavy clay soils of river floodplains in the prairies of the eastern half of Texas, U.S.A., most frequent in the Coastal Bend region, from Cameron County in the south, north to Dallas and Tarrant Counties, west to the Balcones Escarpment, and east to Brazos and Jackson Counties, at elevations from sea level to 250 m.

Phenology and reproductive biology. Flowering from mid-May to mid-July, but periodically into early November during favorable wet warm periods. The flowers open 3–3:45 pm CST in the spring, early summer, and autumn and 1/2 hour later in mid-summer, closing at sunset (7–7:30 pm CST but occasionally remaining open until 8:30 pm CST). On cool, overcast days the flowers may open at noon. The stigmas are well-exserted until the flower wilts, at which time the styles recurve and the flower self-pollinates, allowing fruit formation in the absence of pollinators. Emasculated flowers did not set fruit. Field observations demonstrated that the flowers are visited by solitary bees (*Halictus ligatus*) and weevils (*Macrorhoptus* sp.) which gather or feed upon the pollen, respectively.

In greenhouse culture, seeds germinated in 17–30 days and the plants required 60–65 days of growth to the first flower. During the winter months, the plants remain dormant, blossoming again on vigorous new growth in the spring. Fruits were mature in 33–34 days after anthesis.

Discussion: *Malvastrum aurantiacum* is a Texas endemic whose origins are obscure. Its present distribution resembles the northern half of an Argentina-Paraguay, Gulf Coast disjunct distribution and suggests that it is a long distance disjunct whose ancestral South American population has disappeared. It appears most closely related to *Malvastrum coromandelianum*, particularly in its mericarp morphology (e.g. position of cusps), floral morphology, and ecology. This relationship is obscured by the higher ploidal level and quite different vesture and bracteoles.

As far as is known, the species does not occur south of the Rio Grande. This further supports the long-distance disjunction hypothesis over a south-north migration route.

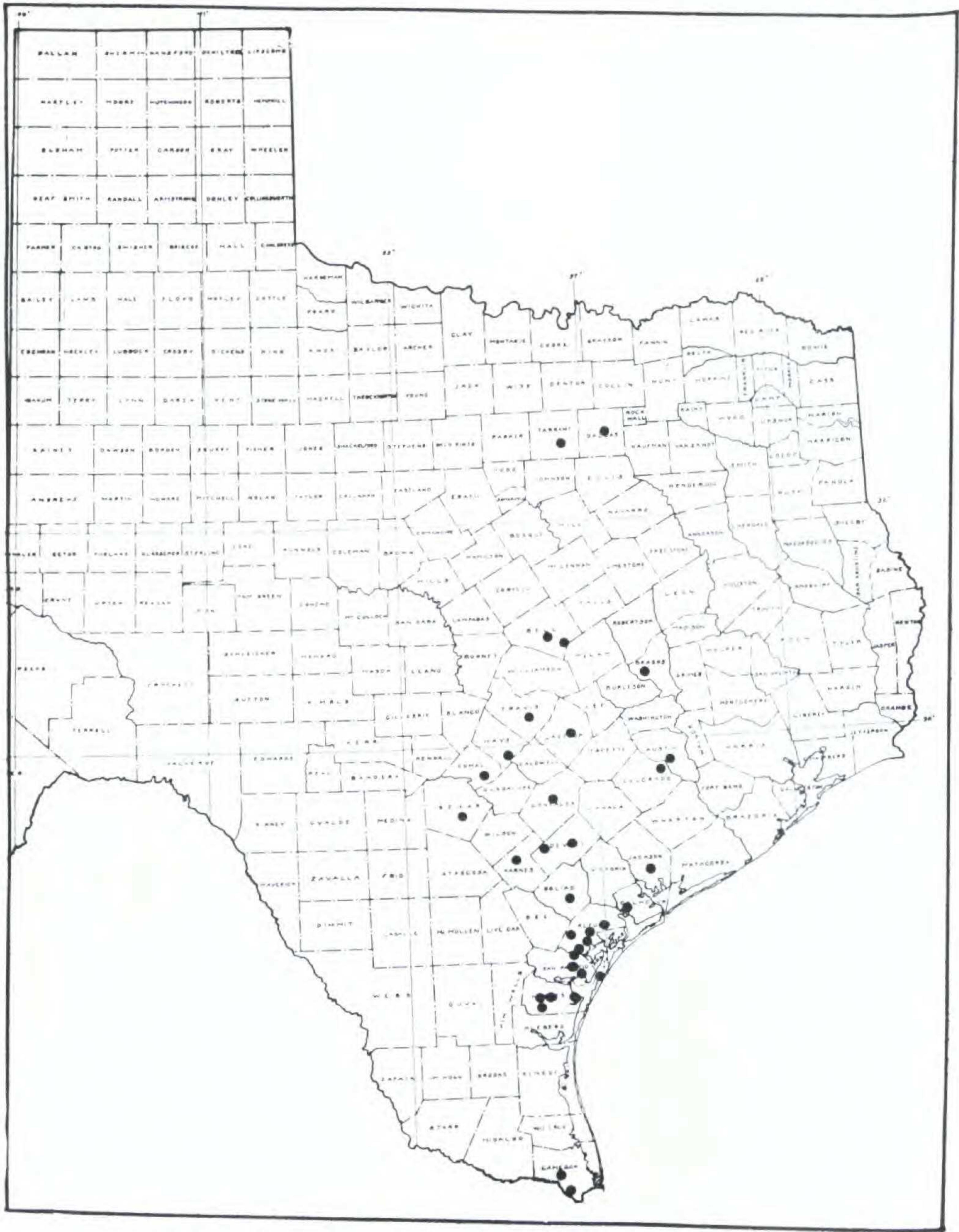


Figure 62. Distribution of *Malvastrum aurantiacum*.

SPECIMENS EXAMINED. UNITED STATES. TEXAS: Aransas Co., Aransas Pass, *Schulz* 813 (US); Bastrop Co., Bastrop State Park, *Lynch* s.n. (TEX); Bell Co., Frio clay, 7 mi. SW of Temple, *Wolff* 847 (TAES, US); Bexar Co., San Antonio, *Havard* s.n. (US); Brazos Co., banks of the Little Brazos River, Hwy. 21, 7 mi W of Bryan, *Hill* 4514 (BRI, CTES, GH, srh, TEX) and 6430 (CTES, SMU, TEX); Calhoun Co., floodplain of Guadeloupe River near Hwy. 35, *Correll & Correll* 38921 (FSU, GH, NCU, TEX, UC); Cameron Co., Brownsville, *Shiller* M 102 (GH, MO, NY, TAES, US); Colorado Co., Hwy

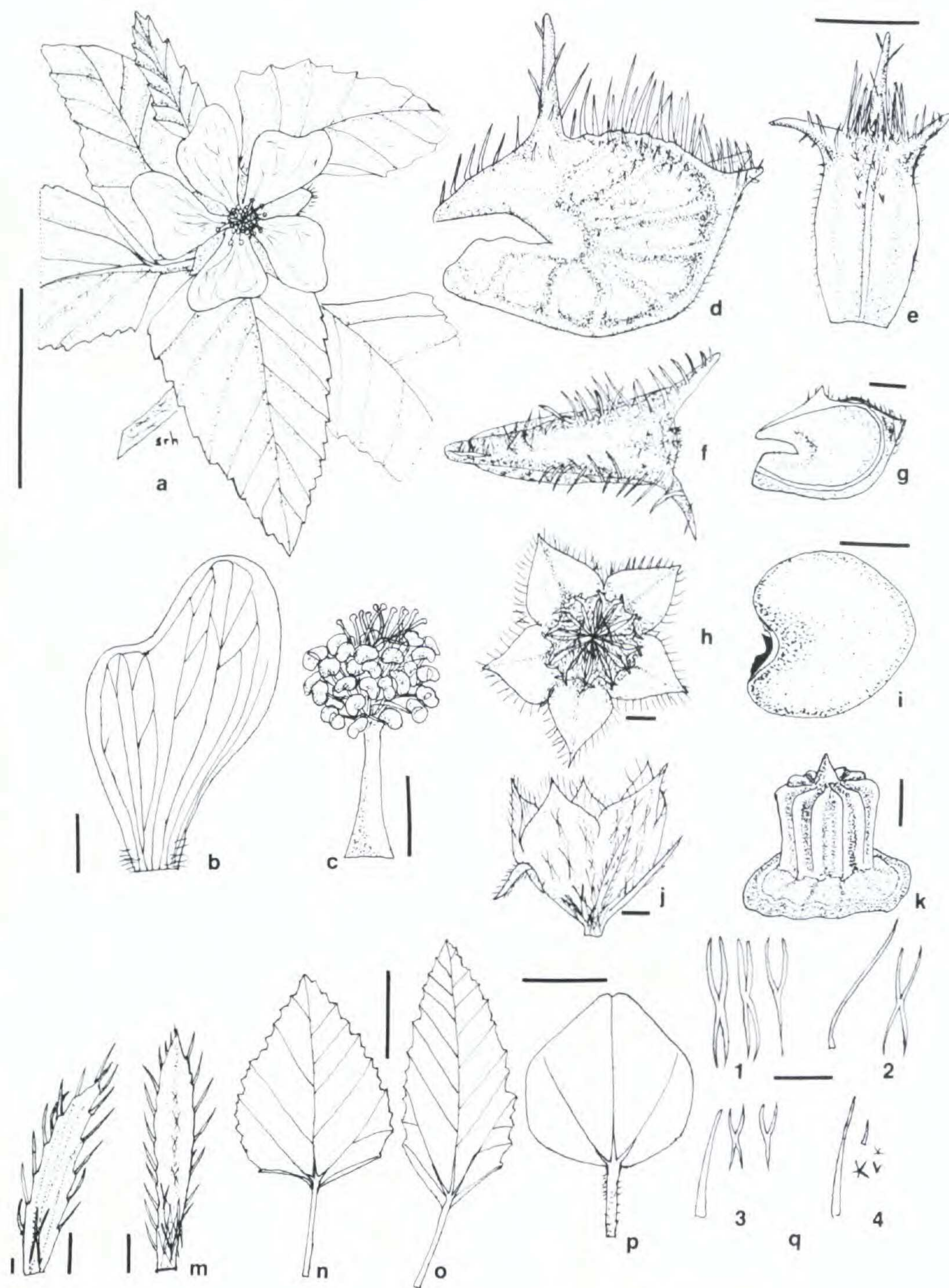
71 just S of I-10 and Columbus, *Thomas et al.* 39024 (NLV, pf); Comal Co., near New Braunfels, *Lindheimer* 240 (=350) (G, GH, GOET, K, MO, NY, OXF, PH, UC, US); Dallas Co., clayey prairies, *Reverchon s.n.* (F, GH, NY, US, VT); lower Tarrant Rd., Grand Prairie, *Wenk* 290B (SMU); Dewitt Co., Cuero, *Tharp* 2483 (TEX, US); Goliad Co., Cadena Creek near Hwy 239 crossing, O'Connor Ranch, ca. 5 mi. SE of Goliad, *Hill* 5878 (SMU, US, VT, WIS); west bank of the San Antonio River, ca. 7 mi. SE of Goliad, *Hill* 6112 (pf, TEX); Gonzales Co., Ottine, *Tharp s.n.* (TEX, US); Hays Co., San Marcos, *Stanfield s.n.* (NY); Jackson Co., Horseshoe Lake, near highway, *Drushel* 10517 (MO, NY); Karnes Co., Panna Maria, Hwy. 123, near Jacobs Creek crossing, *Johnson* 952 (TAFS, TEX); Nueces Co., Corpus Christi, *Parks & Cory* 20654 (TAES); 3.5 mi. W of Petronila, *Fryxell* 2947 (NY, pf, WIS); Refugio Co., west side of Melon Creek 1.8 mi. S of Hwy 774, *Hill* 5302 (srh, TAES, US); along Sous Creek FM 1360, 1.1 mi. S of Woodsboro, *Hill* 7231 (MO, NY); San Patricio Co., irrigation ditch, Hwy. 181, 2.1 mi NW of Gregory, *Hill* 7639 (srh, VT, WIS); Tarrant Co., 6 mi. NE of Arlington, *Parks & Cory* 32117 (TAES); Travis Co., Waller Creek, Austin, *Tharp s.n.* (MICH, TEX).

13a. *Malvastrum coromandelianum* (Linnaeus) Garcke subsp. *coromandelianum*, Bonplandia 5: 295. 1857. Fig. 63, 64.

Malva coromandeliana Linnaeus, Sp. Pl. ed. 1, 2: 687. 1753. TYPE: Hortus Upsaliensis, *Linnaeus* (LECTOTYPE: LINN 870.3). See discussion. *Malva coromandeliana* Panzer in Christmann et Panzer, Pflanzensyst. 8: 448. 1782 ("coromandelica"). *Malva tricuspidata* R. Brown in Aiton f., Hort. Kew. ed. 2, 4: 210. 1812. Based upon *Malva coromandeliana* L., and so a superfluous name. *Sida coromandeliana* Anonymous ex Schlechtendal et Chamisso, Linnaea 5: 226. 1830, pro syn., a horticultural name cited as a synonym of *Malva tricuspidata*. *Malvastrum tricuspidatum* (R. Br. in Ait. f.) A. Gray, Pl. Wright. 1: 16. 1852. *Malveopsis coromandeliana* (L.) Morong, Ann. New York Acad. Sci. 7: 55. 1892. *Malveopsis coromandeliana* var. α *normalis* O. Kuntze, Rev. Gen. 3, 2: 20. 1898, excl. specim. *Malvastrum tricuspidatum* var. α *normale* (O. Kuntze) Stuckert, Anales Soc. Ci. Argent. 114: 28. 1932.

Sida jamaicensis Miller, Dict. ed. 8: no. 5 under *Sida*. 1768, non Linnaeus, 1759. TYPE: Jamaica: Harbor. *Miller* (HOLOTYPE: BM).

Figure 63. ***Malvastrum coromandelianum* subsp. *coromandelianum*.** a. Flowering stem apex, scale = 2 cm. b. Petal, scale = 2 mm. c. Stamens, styles, and stigmas, scale = 2 mm. d.-f. Mericarp, lateral, distal, and apical views, scale = 1 mm. g. Mericarp, internal view, scale = 1 mm. h. Fruit, apical view, scale = 2 mm. i. Seed, scale = 1 mm. j. Calyx, scale = 2 mm. k. Columella and carpocrater, scale = 0.5 mm. l. Stipule, scale = 1 mm. m. Bracteole, scale = 1 mm. n. Midstem leaf, scale = 2 cm. o. Midstem leaf, scale = 2 cm. p. Cotyledon, scale = 5 mm. q. Vesture: 1) stem, 2) leaf, adaxial and abaxial surfaces, 3) calyx, 4) mericarp, scale = 0.5 mm. (a from progeny of *Fryxell* 720a; b-c, m from progeny of *Breedlove* 20019; d-f, h-i, k, q from progeny of *Percival s.n.*; g, j from progeny of *Board* 1106a; l from *Curtiss* 6421; n from *Hill* 6053; o from *Lloyd* 1064; p from progeny of *Hill* 4579).



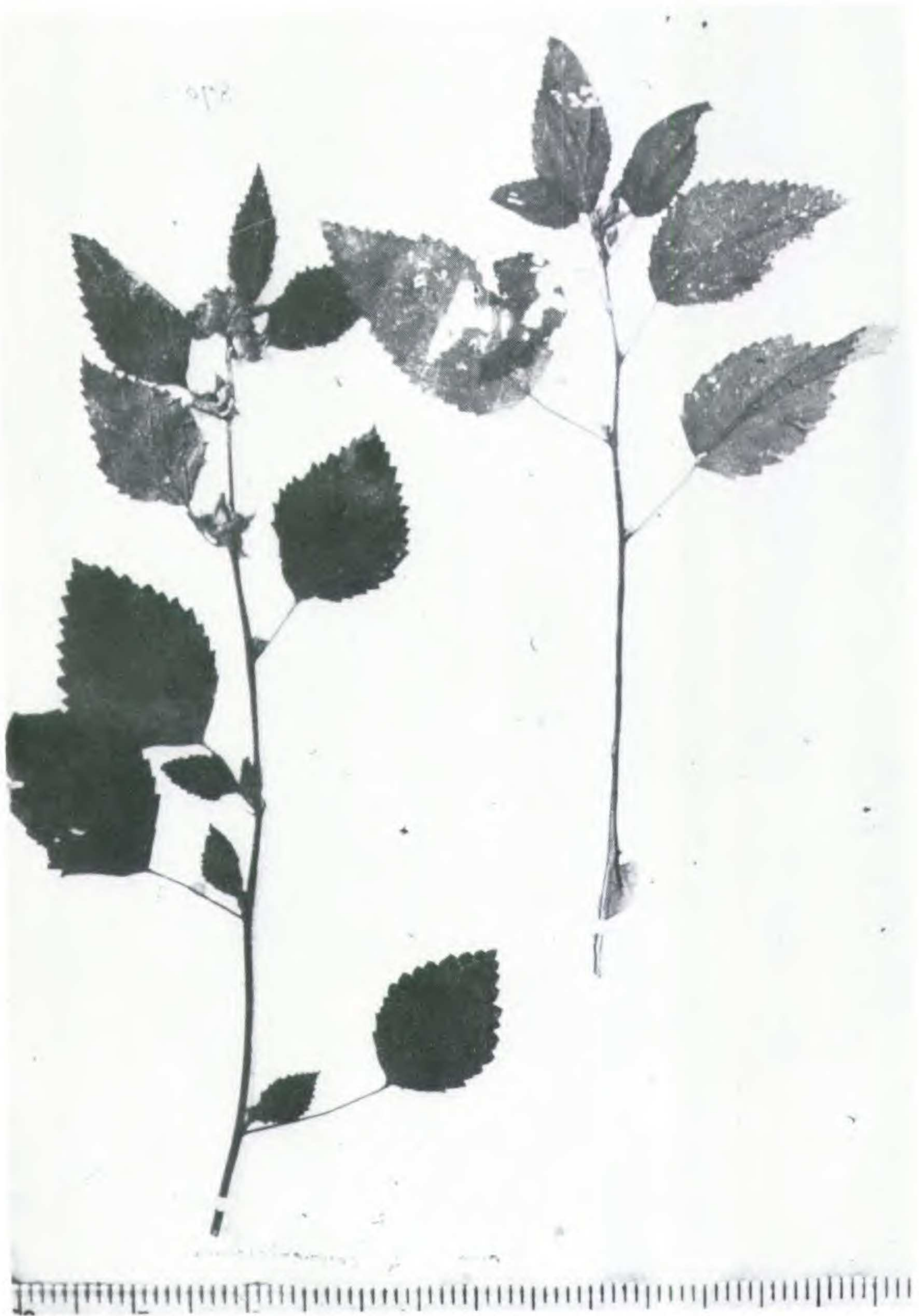


Figure 64. *Malvastrum coromandelianum* subsp. *coromandelianum* (lectotype).

- Malva subhastata* Cavanilles, Diss. 2: 72, t. 21, f. 3. 1768, pro parte. TYPE: Brazil. *Commerson s.n.* (LECTOTYPE: C!). See discussion.
- Malva americana* sensu Cavanilles, Diss. 2: 80, t. 22, f. 2. 1786, non Linnaeus, 1753. Mistakenly applied to *Malvastrum coromandelianum*, as t. 22, f. 2 clearly indicates. *Malva americana* sensu Willdenow, Enum. Plant.: 729. 1809, pro parte, non Linnaeus, 1753. See discussion. *Malveopsis americana* sensu O. Kuntze, Rev. Gen. 1: 72. 1891. *Sphaeralcea americana* sensu Metz, Catholic Univ. Amer. Biol. Ser. 16: 142. 1934. All above excluding the basionym *Malva americana* Linnaeus.
- ?*Malva europaea* Noronha, Verh. Batav. Gen. 5, art. 4: 20. 1790, nomen nudum.
- Malva carpinifolia* Desrousseaux in Lamarck, Encycl. 3: 754. 1792. TYPE: Description based upon "Alcea carpinifolia Americana frutescens", Commelin, Hort. Amstel.: 3, t. 2. 1706 and on living plants of the Royal Botanical Gardens, Paris from America. No authentic specimens have been examined. Also cited in synonymy was Cavanilles, Diss. 2: t. 22, f. 2. 1786, which is *Malvastrum coromandelianum*.
- Malva hispida* Moench, Meth.: 609. 1794, excl. syn. *Malva americana* L. TYPE: Moench's types have been lost, and since the description leaves no question as to its identity, it is chosen as lectotype. The description states "Pericarpia trirostrata, duo dorsalia, unum terminale" clearly indicating *M. coromandelianum*.
- Malva antillarum* Zuccagni, Centuria Prima: obs. 79. 1806. TYPE: based upon seeds sent by Thouin under the name "Malvae des Antilles". Zuccagni's types, formerly at FI, have been lost. The original description "foliis ovatis, obsolete trilobis, glabris, dentato-spinulosis, ciliatis; capsulis tridentatis, dentibus penicillatis" is chosen as lectotype. *Malva tricuspidata* R. Brown in Aiton var. β *subtriloba* De Candolle, Prodrum 1: 430. 1824. Based upon *Malva antillarum* Zuccagni. A specimen in the Prodrum Herbarium (G-DC no. 430.1) is annotated with both names.
- Malva domingensis* Sprengel ex De Candolle, Prodrum 1: 431. 1824. TYPE: Santo Domingo, 1820. *Bertero s.n.* (HOLOTYPE: TO; ISOTYPE: G-DC (microfiche no. 431.4), MO!, TO).
- Sida carpinoides* De Candolle, Prodrum 1: 461. 1824. TYPE: Patr. ign., s. coll. *s.n.* (HOLOTYPE: G-DC)? There are no specimens in the Prodrum Herbarium microfiche bearing this name, which was based upon horticultural specimens of uncertain origin bearing the name *Sida carpinifolia*. The description, particularly "carpellis 10-11 dorso breviter bicornutis et basi interior 1-aristatis" indicates this species. Van Borssum-Waalkes (1966, p. 152) has apparently seen a specimen (G-DC) bearing this name, but did not comment upon it in detail.
- Sida mucronulata* De Candolle, Prodrum 1: 461. 1824. TYPE: Java; s. coll. *s.n.* (HOLOTYPE: G-DC)? There are no specimens in the Prodrum Herbarium microfiche bearing this name, which was based upon specimens from Java similar to those of the preceding but with more oblong-glabrate leaves and shorter cusps on the mericarp. However, van Borssum-Waalkes (1966, p. 152) refers to the holotype (G-DC) without comment.

- Malva ruderalis* Blume, Bijdr. Fl. Ned. Ind.: 64. 1825; non Salisbury, 1796.
 TYPE: Java: waste areas at Djakarta (Batavia), ?*Blume s.n.* (LECTOTYPE: L 908.137-216; ISOTYPE: P). The description "carpellis apice 1-cuspidatis supra basin 2-cuspidatis" along with its weedy nature clearly indicates *M. coromandelianum*. Van Borssum-Waalkes (1966, p. 152) has cited the types above. *Malvastrum ruderale* Hance ex Walpers, Annales 3: 830. 1852. Presumably based upon *Malva ruderalis* Blume although this is not directly indicated, but is evidenced by the following statement "Planta Chinensis cum Javanica identica, testibus speciminibus *ab auctore* in utraque patria lectis" (italics mine) and the indication that the plant is native to Hong Kong and Batavia (Djakarta), Java.
- Sida betulifolia* Anonymous ex Schlechtendal, Linnaea 3: 262. 1828, non Schrank, 1825, pro syn. A horticultural name cited as a synonym of *Malva tricuspidata* R. Brown in Aiton f.
- Malva jamaicensis* Anonymous ex Steudel, Nom. Bot. ed. 2, 2: 94. 1841, pro syn. A horticultural name cited as a synonym of *Malva tricuspidata* R. Brown in Aiton f.
- Malva tricuspidata* R. Brown in Aiton f. var. α *microphylla* A. Richard in de la Sagra, Hist. Phys. Polit. Nat. Cuba. Bot.: 116, 1845. TYPE: no specimens cited, said to be frequent in cultivated areas of Cuba. Presumably based on small-leaved specimens of the typical subspecies, perhaps at P.
- Malva luzonica* Blanco, Fl. Fil. ed. 2: 385. 1845. TYPE: Philippines: Luzon, Manila, *Merrill sp. Blanc. 451* (NEOTYPE: NY!; ISONEOTYPES: BO, L, P, US!) chosen by van Borssum-Waalkes (1966, p. 152). No type was indicated by Blanco. In Blanco, Fl. Filip. ed. 3: t. 251. 1879, this plant is clearly illustrated. No authentic specimens have been examined, and except for 400 specimens at MA, no Blanco collections are known.
- Malva lindheimeriana* Scheele, Linnaea 21: 470. 1848. TYPE: United States . Texas: Comal County. Sterile places in dry, firm clay soil near New Braunfels, August, 1846. *F. Lindheimer 241* distributed by Asa Gray under the number 351 (LECTOTYPE: GOET! ISOTYPES: GH!, K!, MO!, OXF!, PH!, US!). The Göttingen specimen was annotated by Scheele. *Malvastrum lindheimerianum* (Scheele) Walpers, Annales 2(1): 153. 1851.
- Malvastrum carpinifolium* A. Gray, Mem. Amer. Acad. Arts n.s. 4: 22, in adn. 1849, quoad spec., excl. basionym. et syn. *Sida spiraefolia* Willd. et *S. planicaulis* Cavanilles. Gray incorrectly based this name upon *Sida carpinifolia* since he had in hand several misidentified specimens from Madeira, but cited as synonyms *Malva tricuspidata* Aiton and *Malva americana* Cavanilles.
- Malveopsis coromandeliana* (Linnaeus) Morong var. β *parvifolia* O. Kuntze, Rev. Gen. 3(2): 21. 1898. TYPE: Paraguay. near Concepción, September, 1892. *O. Kuntze s.n.* (HOLOTYPE: NY!; ISOTYPE: US!).
- Sida carpinifolia* L.f. f. *umbrosa* Bornmüller ex Hochreutiner, Annuaire Conserv. Jard. Bot. Genève 6: 33. 1902, nomen nudum, pro syn. Based upon a manuscript name on *Bornmüller 376*, Madeira (G!).
- Sida carpinifolia* L.f. f. *aprica* Bornmüller ex Hochreutiner, Annuaire Conserv. Jard. Bot. Genève 6: 33. 1902, nomen nudum, pro syn. Based upon a manuscript name on *Bornmüller 375*, Madeira (BR!, G!).

Malvastrum coromandelianum (Linnaeus) Garcke f. *breviaristata* Chodat et Hassler, Bull. Herb. Boissier ser. 2(5): 290. 1905. TYPE: Paraguay. in saline fields near Concepción, September, 1902. *E. Hassler 7417* (HOLOTYPE: G!; ISOTYPES: BM!, G!, NY!, UC!). Despite the name, the types examined do not have conspicuously shorter cusps than usual for the species; the procumbent habit is a common adaptation seen in the species when growing under poor conditions, and the aspect of the plant as well as the locality matches that of f. *parvifolia* O. Kuntze. In a packet included with the holotype are several mericarps of a *Modiolastrum* that may have actually been the basis for the mericarp description.

Sida oahuensis A. Lévillé, Feddes Repert. Spec. Nov. Regni Veg. 10: 120. 1912. TYPE: Hawaii. Oahu. Honolulu, April, 1909. *U. Faurie 839* (HOLOTYPE: presumably P; ISOTYPE: BM, G!, GH!).

Sida fauriei A. Lévillé, Feddes Repert. Spec. Nov. Regni Veg. 11: 63. 1912. TYPE: Hawaii: Oahu, Waialua. *U. Faurie 5* (HOLOTYPE: presumably at P; ISOTYPE: BM).

Herbaceous annual or perennial 0.2–0.6 (–1.0) m tall but not infrequently flowering when only 6 cm in height, with ligneous crown and stem bases, with a single *main stem* (2) 3–5 (13) mm diam at base and with several to many erect to procumbent basal branches 30–60 cm and somewhat bushy, secondary branching infrequent and usually due to injury; stem *vesture* consisting of strongly appressed overlapping bilateral tardily shed 4-rayed stellate hairs 1.0–2.4 (3.0) mm long oriented longitudinally to the stem axis and usually with a swollen base, the rays infrequently connate or reduced to 2–3 (none simple); *cotyledons* (7–) 9–10 mm long × (7) 9–10 mm wide, ovate, unlobed, minutely emarginate at the apex and truncate to broadly rounded at the base, petioles 5–7 mm long; *stipules* (2) 3–6 (8) mm long × 0.5–1.0 mm wide, subfalcate to falcate, lanceolate, acuminate, conspicuously ciliate on the margins with simple hairs 1.0–2.0 mm long borne on irregular marginal teeth; *petioles* (5) 10–20 (40) mm long; *blades* (1.5) 2.5–4.5 (7) × longer than the petioles, (17) 30–40 (65) mm long × (6) 15–30 (55) mm wide, usually not highly reduced towards apex, average blade 1.5–2.3 × longer than wide, ovate to nearly lanceolate, unlobed or infrequently briefly 3-lobed halfway from the truncate to broadly rounded to frequently wide-cuneate base, apex acute, margin dentate to serrate with 3–5 (7) teeth/cm, *vesture* mostly on intercostal zones and basal part of veins, adaxial surface with scattered fine simple apically or marginally directed hairs or less frequently of 2–4-rayed bilateral stellate hairs 0.5–2.0 mm long, abaxial surface pubescent with simple and/or 2–4-rayed bilateral stellate hairs 1.0

mm diam, the former on intercostal zones and the latter on the veins; *flowers* solitary axillary, at full maturity occasionally congested at apices or rarely on reduced 2-3-flowered apical axillary branches and subtended by reduced leaves and stipules (one blossom produced/day/branch); bifid *floral bracts* lacking; *pedicels* 1-2 mm long in flower to 3-5 mm in fruit; *involucre* of 3 lanceolate, acuminate, subfalcate bracteoles 4-6 mm long $\times$ 0.6-1.0 mm wide, adnate to the calyx in the lower 0.5-1.0 mm; *calyx* united half its length, 5-7 mm in length and 8-11 mm in fruit, broadly campanulate, lobes spreading to incurved, deltate-cuspidate, 4-5 mm long $\times$ 2.0-2.5 mm wide to 5-6 (7) mm long $\times$ 5-6 mm wide in fruit, abaxial surface sparsely pubescent with primarily bilateral appressed (3) 4-rayed stellate hairs 0.5-1.2 mm long directed longitudinally along the veins, with a ciliate margin of simple hairs 0.7-1.2 mm long, adaxial surface nearly glabrous or with minute downy arachnoid hairs on the upper half and marginally to the sinus; *corolla* pale golden-yellow to orange-yellow, (15) 19-21 (24) mm diam at anthesis, petals asymmetrically bilobed, (6) 8-10 (13) mm long $\times$ (4.5) 6-7 (9) mm wide (often shrunken slightly in drying) rotate and planar, exceeding the calyx by 2-3 (5) mm, claws ciliate-pubescent at the basal margin with sparse tufted simple hairs 0.2-0.6 mm long; *androecium* with (16) 24-36 (40) stamens (tending towards 25) occasionally disposed in 5 rows, filament tube (1.5) 2-2.5 mm long, always glabrous, free portion of filaments (0.6) 0.8-1.0 mm long; *gynoecium* with (9) 10-14 (15) carpels, style branching 2 mm above the columella, each branch terminated by a conspicuously expanded hemispherical to subglobose stigma exerted beyond the anthers 1-2.5 mm but recurved at flower wilt; *schizocarps* (5.0) 6-7 mm diam including ornamentation; *mericarps* (9) 10-14 (15), (2.4) 3.0-3.5 (4.0) mm in height $\times$ (3.0) 3.5-4.0 mm long $\times$ 1.0-2.0 mm wide including ornamentation, with a single medial-apical cusp (0.5) 0.8-1.0 (2.0) mm long 1.0-1.2 mm distal to the proximal margin and with two divergent distal-apical cusps (0.3) 0.5-0.7 (1.0) mm long, lateral faces conspicuously ribbed especially at margin, vestiture of the apical surface and cusps of firm proximally directed erect transparent simple hairs 0.6-1.0 mm long mixed with a few minute 2-5-rayed stellate or simple hairs ca. 0.05 mm diam, lateral and distal surfaces glabrous or with a few minute stellate or simple hairs at the apical margin or scattered over the distal 2/3 of the surface, the

proximal-apical chamber extension hollow, mericarp indehiscent or loosely sealed along the proximal-apical margin, endoglossum lacking, readily shed from the receptacle and calyx at maturity; *seeds* (1.5) 1.7–1.9 mm in height $\times$ 1.5–1.7 mm in length $\times$ 0.7–0.8 mm wide; *chromosome number*: $n = 12$, $2n = 24$; *pollen* 68–87 (108) (79) μm diam, echinae 5–8 μm , apertures (15) 20–32.

Distribution. (Fig. 65, 66) Pan-tropical in native or introduced populations mostly in alkaline soils between 35° N and 35° S latitudes; in the Western Hemisphere it is found from Texas and Florida in the north, south through the Caribbean region and Central America to coastal regions in South America to northeastern Argentina, not only in areas of human disturbance but also in river drainage systems at elevations from near sea-level to, less frequently, 2600 m.

Phenology and reproductive biology. In temperate portions of its range (such as Texas) plants begin flowering in mid-April and blossom continuously under proper conditions until frost in late November; in the frost-free portions of its range this species flowers all year with adequate water. Seeds from several populations cultivated in the greenhouse in Texas (i.e. *Board 1106a*, *Hill 4465*, *Hill 4579*, *Percival s.n.*, *Fryxell 720a*, *Corral-L. 13*, *Breedlove 20019*, and *Morel 8095*) uniformly germinated 4 days after planting and flowered 50–60 days later at the 5th or 6th leaf node when 10–15 cm tall. Flowering was continuous as long as they were maintained, although they flowered less in the cooler winter months. Each flower, lasting a single day, opened at 3:45–4 pm CST and closed at 5:15–5:30 pm CST; flowers of the several populations from different regions raised together differed in this schedule by no more than 15 minutes. The stigmas, at first exserted beyond the anthers, began to recurve after one hour and were dusted by pollen.

Populations in Texas were observed frequently in the field throughout the year and at no time were pollinators observed on the flowers. Emasculated flowers did not set fruit. The plants seem to set fruit primarily through self-pollination, through the flowers are well-designed for cross-pollination and undoubtedly in some portions of its range the species often utilizes this mode. Fruits mature in 19–22 days from pollination.

As early as 1845, Blanco (Fl. Filip ed. 2: 383) commented that the flowers of this species open at 2 pm and close at 4 pm. In Ghana,

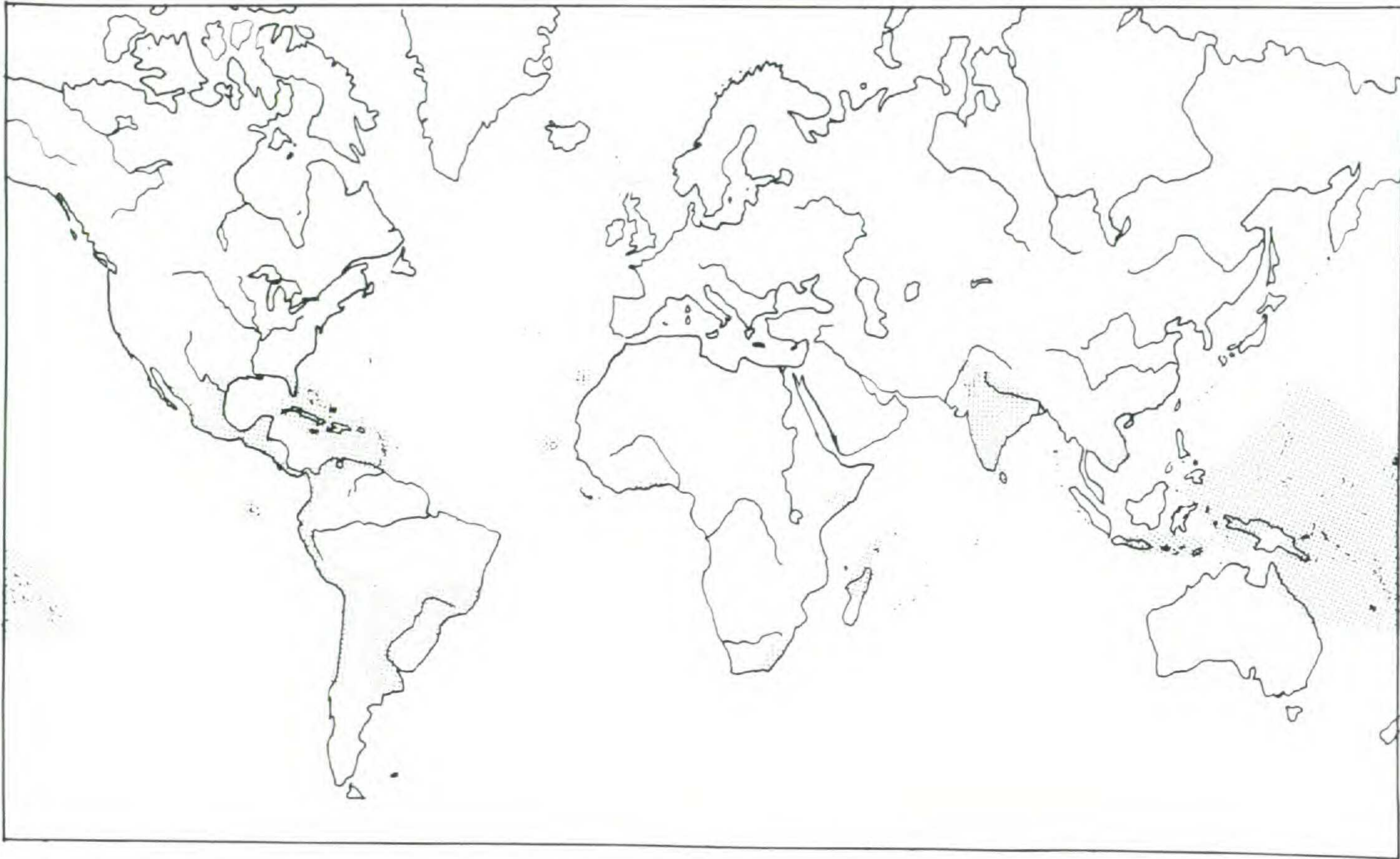


Figure 65. Distribution of *Malvastrum coromandelianum*.

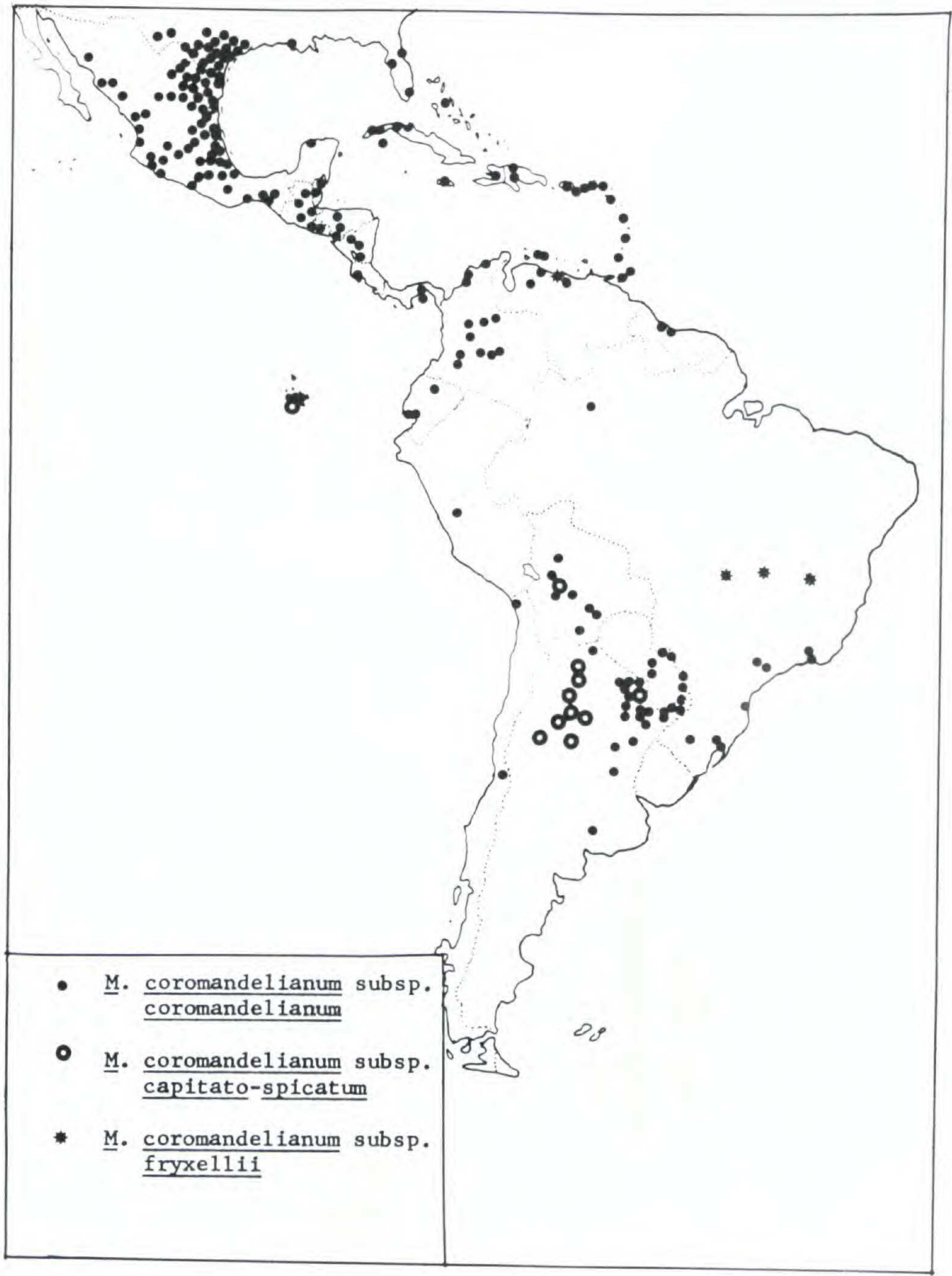


Figure 66. Distribution of *Malvastrum coromandelianum* in the New World.

the flowers are said to be open from 1:00–5:15 pm local time (Newton & Kisseadoo, 1978).

Discussion. The protologue of *Malva coromandeliana* Linnaeus contains several elements. Although Linnaeus cited as a synonym “*Althaea coromandeliana*, angustis praelongis foliis, semine bicornis” (Plukenet, Mantissa: 10, t. 334, f.2. 1700) as a basis of his name, this plate and description indicate *Sida acuta* Burm. f. The specimen in the Plukenet Herbarium (never examined by Linnaeus according to Stearn, 1957, p. 105) bearing this name (BM - photo Killip neg. no. 624 at US!) is composed of both *Sida acuta* Burm. f. and *Malvastrum coromandelianum*, the former matching Plukenet’s plate. In the Clifford Herbarium (Linnaeus cited “Hort. Cliff. 346”) is a specimen with two fragments (BM - Killip neg. no. 623-US!) one of which is this species but the annotations are in a hand other than that of Linnaeus. In the Linnaean Herbarium are several specimens, one of which (LINN 870.3) is annotated “H.U., *Malva 2 coromandeliana*” in Linnaeus’ script. Since this specimen is part of the protologue (Linnaeus cited “Hort. ups. 201”) and since it is a representative specimen, it has been designated as the lectotype.

Malva subhastata Cavanilles was based on an assemblage of vegetatively similar specimens from such diverse regions as Brazil, Peru, and Réunion. His figure (t. 21, f.3) depicts *Malvastrum coromandelianum* with regard to such features as the lanceolate stipules and ciliate calyx. Cavanilles cited “Ex itineribus Commersonis . . . v.s. communicatam a D. Thouin”. The specimen at Copenhagen bears the label “*Malva foliis angulatis; Commerson: e Brasilia ded. Dr. Thouin*” and is chosen as the lectotype. *Malvastrum coromandelianum* occasionally has briefly three-lobed leaves (the lobes in the lower half of the leaf) that may by some be termed subhastate.

Willdenow misapplied the name *Malva americana* to *Malvastrum coromandelianum*. In the Willdenow herbarium are four specimens bearing this name, all no. 12751 (B-W). The first two sheets are *M. coromandelianum*, the third is probably *M. corchorifolium*, and the fourth is tentatively assigned to *M. coromandelianum*.

When one thinks of the genus *Malvastrum*, the most frequent species *Malvastrum coromandelianum* first comes to mind. The species is easily identified by means of its tricuspidate mericarps and weedy habit. In the Caribbean and Central America, *M. coromandelianum* can be distinguished from *M. corchorifolium* by the

indument of simple hairs on the upper leaf surface of the former. The species establishes itself readily throughout the tropics, and is particularly well-established in India and Polynesia. However, there are few specimens from Africa and the majority of Australia. *Malvastrum coromandelianum* subsp. *coromandelianum* is most diverse in the Paraná region of Argentina and Paraguay, and again from Texas to Mexico, particularly regarding flower size, position, hue, and plant habit. Introgression may be occurring with subsp. *capitato-spicatum* in Argentina.

REPRESENTATIVE SPECIMENS: **UNITED STATES.** MASSACHUSETTS: Middlesex Co., wool waste dump, Westford, *Fletcher s.n.* (GH, US); PENNSYLVANIA: Delaware Co., wharves and railroad sidings, Chester, *Benner s.n.* (PH); Philadelphia Co., introduced at Old Navy Yard, Philadelphia, *Burk s.n.* (F, PENN); NEW JERSEY: Camden Co., on ballast, Camden, *Martindale s.n.* (F, MO, NY, PH, US); FLORIDA: Dade Co., Homestead, *Gillis 7281* (BH, MO); Leon Co., Tallahassee, *Godfrey 53354* (FSU, GA, GH, NCU, NY, SMU, UC); St. Johns Co., St. Augustine, *Curtiss 6421* (BKL, CU, DAO, G, GH, MO, NY, UC, US, VT); ALABAMA: Mobile Co., Mobile and Ohio RR wharf, Mobile, *Mohr s.n.* (US); LOUISIANA: Cameron Parish, Hwy. 82 E of Grand Chenier, *Thieret & Reese 9997* (DAO, FSU, TEX); TEXAS: Bastrop Co., Bastrop, *Duval s.n.* (TEX, US); Bexar Co., San Antonio, *Albers 44008* (SMU, TEX); Brazoria Co., Columbia, *Bush 303* (GH, MO, NY, UC); Burleson Co., 5.5 mi. N of Snook, *Hill 4465* (srh); Calhoun Co., Port Lavaca, *Tharp 1585* (NY, TEX); Callahan Co., Baird, *Letterman 101* (MO); Cameron Co., 4 mi SE of Olmito, *Hill 6053* (TEX); 1 mi. W of Palmito Hill, Rte. 4, *Hill 6061* (TAES, TEX); Comal Co., New Braunfels, *Lindheimer 682* (BR, F, GH, NY, PENN, TEX, US, VT); DeWitt Co., 2 mi. SW of Yoakum, *Hill 7715* (SMU, srh, TAES, TEX, US, VT, WIS); Duval Co., San Diego, *Croft 215* (NY); Edwards Co., TAES Research Institute, substation 14, *Cory 38348* (TEX); Gillespie Co., *Jermy s.n.* (MO); Goliad Co., ca. 9 mi. SE of Goliad near the San Antonio River, *Hill 5889* (GH, pf, srh); Gonzales Co., *Whitehouse s.n.* (TEX); Harris Co., Houston, *Hill 4579* (srh, TEX); Hidalgo Co., Mission, *Clover 113* (MICH); Jackson Co., S of Vanderbilt, *Barkley & Tharp 13A142* (GH, MO, NY, PH, SMU, TEX); Jeff Davis Co., 12 mi. N of Alpine, *Hinckley 4890* (US); Jim Wells Co., Premont, *Johnston 541537* (TEX); Karnes Co., 1.25 mi. SW of Helena, *Johnson 802* (CAS, TAES, TEX); Kenedy Co., Saltillo Pasture, *Johnston 541662* (TEX); Kinney Co., Fort Clark, *Mearns 1402* (US); Kleberg Co., Kingsville, *Bogusch 11893* (US); La Salle Co., 6.5 mi. W of Fowlerton, *Cory 28520* (GH); Lavaca Co., Hwy. 77, 1.2 mi. N of FM 532, *Hill 7958* (CTES, pf, SMU, srh, TEX); Live Oak Co., Grant Ranch, *Tharp s.n.* (MO, SMU); Matagorda Co., 1.5 mi. W of Bay City, *Cory 51103* (DS, GH, MICH, NY, SMU, UC, US); Maverick Co., 9 mi E Eagle Pass, rte 277, *Correll & Johnston 19470* (FSU, TEX); McMullen Co., 1.7 mi. N of Tilden, *Shinners 16966* (SMU); Medina Co., 23 mi. NE of Hondo, *Cory 34957* (TAES); Nueces Co., Robstown, *Wolcott & Barkley 16T402* (SMU, TEX); Pecos Co., *Buckley s.n.* (NY); Real Co., Frio River at Leakey, *Cory 44502* (TAES); Refugio Co., ca. 5 mi. S of Refugio, FM 2678, *Hill 5112* (MO, NY, SMU, srh, TAES); San Patricio Co., Welder Wildlife Refuge, *Board 1106a* (pf); Travis Co., Austin, *Bodin 127* (US); Uvalde Co., Uvalde, *Palmer 104* (K, NY, US); Val

Verde Co., Del Rio, *Correll 14966* (TEX, UC, US); Victoria Co., 7 mi. SW of Victoria, *Hill 6362* (SMU, TAES, TEX); Webb Co., 3 mi. NE of Laredo, *Earles & Villarreal 64* (SMU, TEX); Willacy Co., 3 mi. S of Raymondville, *Shinners 17114* (SMU); Zapata Co., *Board 1102* (pf); 2.8 mi. N of San Ygnacio, *Shinners 30860* (SMU).

MEXICO. BAJA CALIFORNIA: Dist. del Sur, San José de Comondú, *Carter et al. 2112* (DS, UC); CAMPECHE: Tuxpeña, *Lundell 1255* (DS, GH, MICH, MO, NY, UC, US); CHIAPAS: 22 km. N of Tuxtla Gutiérrez, *Breedlove 20019* (DS, pf); COAHUILA: 35 mi. NW of Múzquiz, *Fryxell 2681* (pf, TEX); COLIMA: Manzanillo, *Palmer 1041* (GH, NY, US); DURANGO: Durango City, *Palmer 203* (GH, K, MO, NY, UC, US); GUANAJUATO: 14 mi. SE of León, *Waterfall & Wallis 13894* (SMU); GUERRERO: Atoyac, Galena, *Hinton 14558* (GH, NY, PH, TEX, US); HIDALGO: Dist. Jacala, Jacala to Pacula, *Moore 1808* (BH, GH); JALISCO: between Jamon and Guadalajara, *Gregg 850* (MO); MÉXICO: Mun. Tepozotlan, Paso de la Concepción, *Alonso s.n.* (ENCB); MICHOACAN: Punguato, near Morelia, *Arsène s.n.* (MO, US); MORELOS: Cuernavaca, *Pringle 9075* (CU, GH, MO, US, VT); NAYARIT: 15 km. SE of San Blas, *Feddema 978* (MICH, TEX); NUEVO LEÓN: 2 mi. N of Sabinas Hidalgo, *Barkley et al. 14524A* (GH, MO, PH, TAES); OAXACA: Oaxaca, *Ernst 2270* (US); PUEBLA: 8.5 mi. N of Matamoros, *Dunn & Dunn 18768* (pf); QUERÉTARO: Querétaro, *Arsène 10611* (MO, US); QUINTANA ROO: Cozumel Isl., *Steere 2965* (MICH); SAN LUIS POTOSI: Tamazunchale, *Edwards 447* (DS, GH, MO, NY, PENN, SMU, TEX, UC); SINALOA: Culiacán, *Brandeggee s.n.* (US); SONORA: Sonora Alta, *Coulter 799* (GH, NY); TAMAULIPAS: 90 km. NW of Tampico, *Percival s.n.* (pf); VERACRUZ: 3 km. E of Tuzamapan, Coatepec, *Corral-Lorenzoni 13* (pf); Papantla, *Fryxell 720a* (pf); YUCATAN: Chichen Itzá, *Rose M521* (RSA); ZACATECAS: San Juan Capistrano, *Rose 2446* (US); **GUATEMALA.** GUATEMALA: Guatemala City, *Harmon 2021* (UMO); PETEN: La Libertad, *Aguilar 83* (G, MICH, NY); ZACAPA: Zacapa, *Kellerman 2931* (NY); **BELIZE.** Dist. Cayo, Grano de Oro, *Croat 23381* (MO); **EL SALVADOR.** San Salvador, *Calderón 154* (GH, MO, NY, US); **HONDURAS.** SWAN ISLAND: *Nelson 95* (GH); TEGUCIGALPA: El Zamorano, campus, *Molina 25891* (MO, NY); YORO: Quebrada Seca, *Standley 53929* (US); **NICARAGUA.** ESTELÍ: Mechapa, *Atwood 984* (VT); MADRIZ: 2 km. S. of Yalaguina, *Hamblett 797* (NY, SMU); MATAGALPA: Matagalpa, *Williams et al. 23821* (TEX); **COSTA RICA.** GUANACASTE: Hacienda Valle Brimont, *Brenes s.n.* (NY); LIMÓN: Port Limón, *Greenman & Greenman 5273* (MO); **PANAMA.** PANAMA: near Panama City, *Standley 27691* (C, US); CANAL ZONE: Ancón, *Piper 6015* (US); TABOGA ISLAND, *Standley 27837* (US).

BERMUDA. N of Hamilton, *Brown & Britton 248* (BKL, K, NY, PH, US); **BAHAMAS.** ELEUTHERA: Governor's Harbour, *Britton & Millspaugh 5461* (NY); NEW PROVIDENCE: Nassau, *Wight 196* (GH); **CUBA.** ISLA DE PIÑOS: Caleta Crocodrilos, *Britton et al. 15324* (NY, US); CAMAGUEY: La Gloria, *Shafer 172* (NY, US); HABANA: near Marianao, *León 629* (NY); LAS VILLAS: Río San Juan, *Britton et al. 5932* (NY); MATANZAS: Tomory Valley, N of Matanzas, *Rugel 35* in part (NY, pf); ORIENTE: Santiago, *Clemente 5329* (GH, NY); PINAR DEL RÍO: Guanajas, *Palmer & Riley 798* (NY); **HAITI.** TORTUE ISLAND: La Vallée, *Leonard & Leonard 11558* (MO, NY, US); NORD-OUEST: Bassin Bleu, *Leonard & Leonard 14900* (US); NORD: Plaisance, *Leonard 9236* (GH, UC, US); ARTIBONITE: Ennery, *Leonard 8948* (PH, US); OUEST: Port au Prince, *Rose 23992* (US); **DOMINICAN REPUBLIC.** AZUA: Azua, *Rose & Firch 3947* (NY); BARAHONA: Barahona, *Howard & Howard 8468* (GH, NY); MONTE CRISTI: Monción, *Valeur 751* (C, MICH, US); PLATA: Puerto Plata, *Raunkiaer 1184* (US); SANTIAGO:

Herradura, *Jiménez* 1331 (CAS, US); SANTO DOMINGO: Santo Domingo, *Ekman* 11380 (B, US); **PUERTO RICO**. AGUADILLA: Rincón, *Sintenis* 5532 (B, NY, US); GUAYAMA: Aibonito, *Sintenis* 2954 (G, US); MAYAGÜEZ: Guanica, *Britton et al.* 4882 (NY); PONCE: Caja de Muertos, *Britton et al.* 4984 (NY); SAN JUAN: Bayamón, *Sintenis* 1034 (G, MO, NY); CULEBRA ISLAND: *Britton et al.* 240 (NY, US); VIEQUES ISLAND: Isabel Segunda, *Shafer* 2508 (CAS, NY, US); **VIRGIN ISLANDS**. ST. CROIX: Bassin Yards, *Ricksecker* 4 (GH, MO, NY, UC, US); ST. THOMAS: Villa Olga, *Croat* 75 (MO, US); TORTOLA: *Fishlock* 24 (CAS, NY, US); **JAMAICA**. MIDDLESEX: Kingsland, *Adams* 13149 (MO); SURREY: Kingston, *Harris* 6851 (F, US); **ST. MARTIN**. *Shiffers* 2347 (GH); **ST. BERTHELEMY**. Morne, Grand Bous, *Questel* 199 (NY); **ST. EUSTATIUS**. Orangestad, *Shiffers* 3860 (GH); **ANTIGUA**. Gunthorpes, *Box* 920 (MICH, MO, pf, US); **GUADELOUPE**. GUADELOUPE. Basse-Terre, *Duss* 2333 (NY, US); LA DESIRADE: Grande Anse, *Proctor* 21287 (GH); **MARTINIQUE**. St. Pierre, *Duss* 859 (MO, NY); **ST. VINCENT**. Ft. Charlotte, *Morton* 4827 (US); **BARBADOS**. Bathsheba, *Waby* 102 (US); **GRENADA**. Richmond Hill, *Broadway s.n.* (GH); **TOBAGO**. Buccoo Bay, *Purseglove* 6263 (K, US); **TRINIDAD**. Pointe Gourde, *Britton & Broadway* 2650 (GH, NY, US); **CURACÃO**: St. Thomas College, *Arnoldo* 2126 (US).

GUYANA. Georgetown, *Irwin T-40* (TEX); **VENEZUELA**. ARAGUA: Maracay, *Cornelio* 153 (US); DISTRITO FEDERAL: La Florida, near Caracas, *Alston* 5205 (BM); LARA: Barquisimeto, *Saer* 592 (F); TACHIRA: La Guanja near Rubio, *Farenholtz* 2023 (U); **COLOMBIA**: ANTIOQUIA: Medellín, *Archer* 3 (US); BOLIVAR: Cartagena, *Heriberto* 113 (US); BOYACÁ: Guateque, *Arbelaez* 419 (US); CALDAS: La Jopa, Río Paez, Tolima, *Lehmann* 7823 (GH, US); CUNDINAMARCA: Soacha, near Bogotá, *Apollinaire & Arthur* 111 (US); MAGDALENA: Santa Marta, *Smith* 730 (DAO, G, GH, MICH, MO, NCU, NY, PH, UC, US, VT, WIS); SANTANDER: Galán, *Rueda-P.* 297 (US); VALLE DEL CAUCA: Plana del Valle, Zarzal, *Cuatrecasas* 22117 (F); **ECUADOR**. GUAYAS: Playas, *Asplund* 5101 (NY); GALÁPAGOS: Charles (Santa Maria) Island, *Andersson s.n.* (GH); Chatham (San Cristóbal) Island, western portion, *Schimpff* 129 (BKL, CAS, G, MO, NY, U); **PERU**. HUÁNUCO: Huánuco, *Asplund* 13483 (G, US); LIMA: Chosica, *Stafford* 37 (K); **CHILE**. SANTIAGO: Santiago, *Gigoux s.n.* (GH); TARAPACÁ: Arica, *Jaffwell* 1093 (GH); **BOLIVIA**. BENI: Reyes, *Rusby* 1418 (MICH, NY, US); COCHABAMBA: Cochabamba, *Shepard* 261 (CAS, GH, NY, US); LA PAZ: Coripata, Yungas, *Bang* 2111 (G, GH, K, MICH, MO, NY, PH, US); SANTA CRUZ: El Palmarito, Cabezas, Cordillera, *Perecho* 322 (GH); **BRAZIL**. AMAZONAS: upper Río Negro River, *Weiss & Schmidt s.n.* (NY); BAHIA: *Luschnath* 170 (BR); CEARÁ: Sitio Clementes, Quixcara, *Leite* 3 (CAS); GUANABARA: Río de Janeiro, *Dusén* 87 (GH, NY, US); MINAS GERAIS: Juiz de Fora, *Holway & Holway* 1409 (US); PARANÁ: Porecatu, *Hatschbach* 23472 (MICH, NY, UC); PERNAMBUCO: Tapera, *Pickel s.n.* (B, BH, DS, GH, MO, PH, US); RIO GRANDE DO SUL: São Leopoldo, *Eugenio* 113 (NY); SANTA CATARINA: Itajaí, *Conrad & Dietrich* 2125 (MO); SÃO PAULO: Campinas, *Holway & Holway* 1700 (GH, US); **ARGENTINA**: BUENOS AIRES: Alsina, *Krapovickas* 3309 (NY); CHACO: Dpt. Resistencia, Laguna Blanca, *Hovimber* 39 (GH); CORRIENTES: 26 km. SE of Libertador, *Krapovickas et al.* 27427 (MO); FORMOSA: Guaycole, Formosa, *Jorgensen* 3159 (MO, US); Dpt. Pilcomayo, Isla Yobay Guazú, *Morel* 8095 (GH); MISIONES: Dpt. San Ignacio, Isla Pindoi-corpus, *Krapovickas* 2361 (F, MO); SANTE FE: Dpt. San Cristóbal, Ceres, *Balegno* 562 (MO); **PARAGUAY**. ASUNCIÓN: Pilcomayo River, *Morong* 995 (GH, MO, NY, PH, US); CONCEPCIÓN: near Concepción, *Hassler* 7417 (BM, G, NY, UC); río Apa, calcareous region,

Hassler 11217 (A, G, GH, K); SAN PEDRO: Alto Paraguay, *Woolston 250* (NY); **URUGUAY**. Cuaresin (Antigos), *Berro 1568* (C);

MADEIRA ISLANDS. MADEIRA: Funchal, *Bornmüller 375* (BR); **GHANA**. ASHANTI: Cadbury Hill, Kumasi, *Darko 594* (MO); EASTERN PROVINCE: New Jafo, *Levi 4094* (MO); **SOUTH AFRICA**. EAST CAPE: Port St. Johns District, *Mogg s.n.* (MO, NY); NATAL: Pietermaritzburg Distr., *Kapi 37* (MO); TRANSVAAL: Distr. Zootpansberg, 42 mi W of Louis Trichardt, *Schleben 7545* (B); **KENYA**. Nairobi, *Lambinon 75/262* (MO); **NIGERIA**. Oyo, Ibadon, *Kea & Stanfield 37064* (B); **FARQUHAR ATOLL**. *Stoddart & Poome 1378* (US); **MADAGASCAR**. Prov. Diego Suarez, D'Antoirane, *Viguiet & Humbert 131* (B); **INDIA**. ANDHRA PRADESH: E. Godavari, *Wagh 1697* (MO); BENGAL: Bengal and Madras, *Thomson s.n.* (G, GH); DELHI: Delhi, *Dewan s.n.* (TEX); HIMACHAL PRADESH: Pathankot, *Stewart 1767* (BH, MO, NY, PH); KASHMIR: Muzaffarabad, Azadkashmir, *Qaiser & Abedin 9189* (US); MADRAS: Hosur Taluk, Salem, *Yeshoda 129* (B, GH, NY); MYSORE: Hassan, *Saldanha 13573* (US); ORISSA: Pottangi, *Mooney 3910* (GH, MO, NY); PUNJAB: Bhadwar, Kangra, *Koelz 4094* (GH, MICH, NY); RAJASTHAN: Dungarpur, *Verma 171* (MO); UTTAR PRADESH: Etawah, *Dudgeon & Kenoyer s.n.* (MO); **WEST PAKISTAN**. KARACHI: Ayub Park, *Quaiser 243* (NY); LAHORE: Gujranwala distr., Khongah Dagram, *Stewart 1432* (GH); SARGODHA. Bagh-a-Jinah, *Abedin 2377* (BH, MO); **SRI LANKA (CEYLON)**. UVA; Matale District, road from Naula to Daubulla, *Howicke et al. 316* (F, MO, NY); **BURMA**. Mandalay, *White 59* (US); **VIETNAM**. Da Nang, *Clemens & Clemens 3957* (CAS, G, GH, MICH, MO, NY, pf, PH, US); **HONG KONG**. Kowloon, *Hu 10696* (US); **CHINA**. FUKIEN: Fu-chou, Chong Chen Sang, *Tang 6653* (WIS); KWANGTUNG: Honam Island, *Levine 820* (GH, MO, US); **TAIWAN**. Little Quemoy, *Chuang s.n.* (GH); **RYUKYU ISLANDS**. MIYAKO JIMA: SW of Tanani, *Fosberg 38173* (NY, US); OKINAWA: Naha, *Walker et al. 5739* (US); **PHILIPPINES**. LUZON: Manila, *Merrill 451* (GH, MO, NY, US); MINDORO: Mt. Yagaw, *Conklin 18662* (GH); SULU ARCHIPELAGO: Cebu, *McGregor 1685* (NY, US); **INDONESIA**. JAVA: Garoet, *Millspaugh 3091* (F); LOMBOK: *de Voogd 2066* (NY); **CELEBES**. BITUNG (BILLITON) ISLAND: *Alston 16596* (GH); **MOLUCCAS**. BABON ISLAND: Letwurung, *Borssum-Walkes 3077* (GH); **BRITISH NORTH BORNEO**. Bumbun, *Wood 2298* (UC); **NEW GUINEA**. Mordee distr., Finschafen, *Clemens 4278* (GH); **AUSTRALIA**. NORTHERN TERRITORY: Mitchell Station, Darwin, *Nelson 1011* (AD); QUEENSLAND: Jericho, Mitchell distr., *Clemens s.n.* (GH, MICH); NEW SOUTH WALES: Casino, *Betche s.n.* (G); HERON ISLAND: Capricorn group, *Fosberg 55058* (US); LORD HOWE ISLAND: Transit Hill, *Greene s.n.* (GH); **BONIN ISLANDS**. HABA-JIMA: *Wilson 8285* (GH, US); **MARIANAS**. AGRIHAN ISLAND: *Fosberg 31436* (US); ALAMAGAN ISLAND: *Falanruw 1938* (US); SAIPAN ISLAND: Fanuchuluyan Bay, *Fosberg 31340* (US); TINIAN ISLAND: *Fosberg 24900* (NY, US); ROTA: *Fosberg 31904* (NY, US); GUAM: *Fosberg 32640* (NY, US); **NEW CALEDONIA**. NOUMÉA: Nouméa, *Franc 808* (F, G, GH, NY, UC, US); **FIJI**. Voli voli, Nadronga, *Koroiveibau 10667* (GH, NY, US); **ILES DE HORN**. ALOFI: *Yuncker 10033* (US); **TONGA**. Pangai (Haapai), *Soakai 304* (GH); TONGATAPU ISLAND: Village of Fu'amotu, *Yuncker 15162* (US); **HAWAIIAN ISLANDS**. MIDWAY ISLAND: Sand Island, *Fosberg 35704* (US); KAUAI: Niumalu Bay, *Degener 8979* (NY); OAHU: Keena Military Reservoir, *Degener & Degener 31765* (A, NY); LANAI: Palawai, *Munro 183* (NY); HAWAII: Hoolehua, Molokai, *Degener 6066* (CAS, MO, NY, US); FANNING ISLAND: *Herms & Kirby s.n.* (DS, GH, UC); **COOK ISLANDS**. Rarotonga, Ruarua, *Philipson*

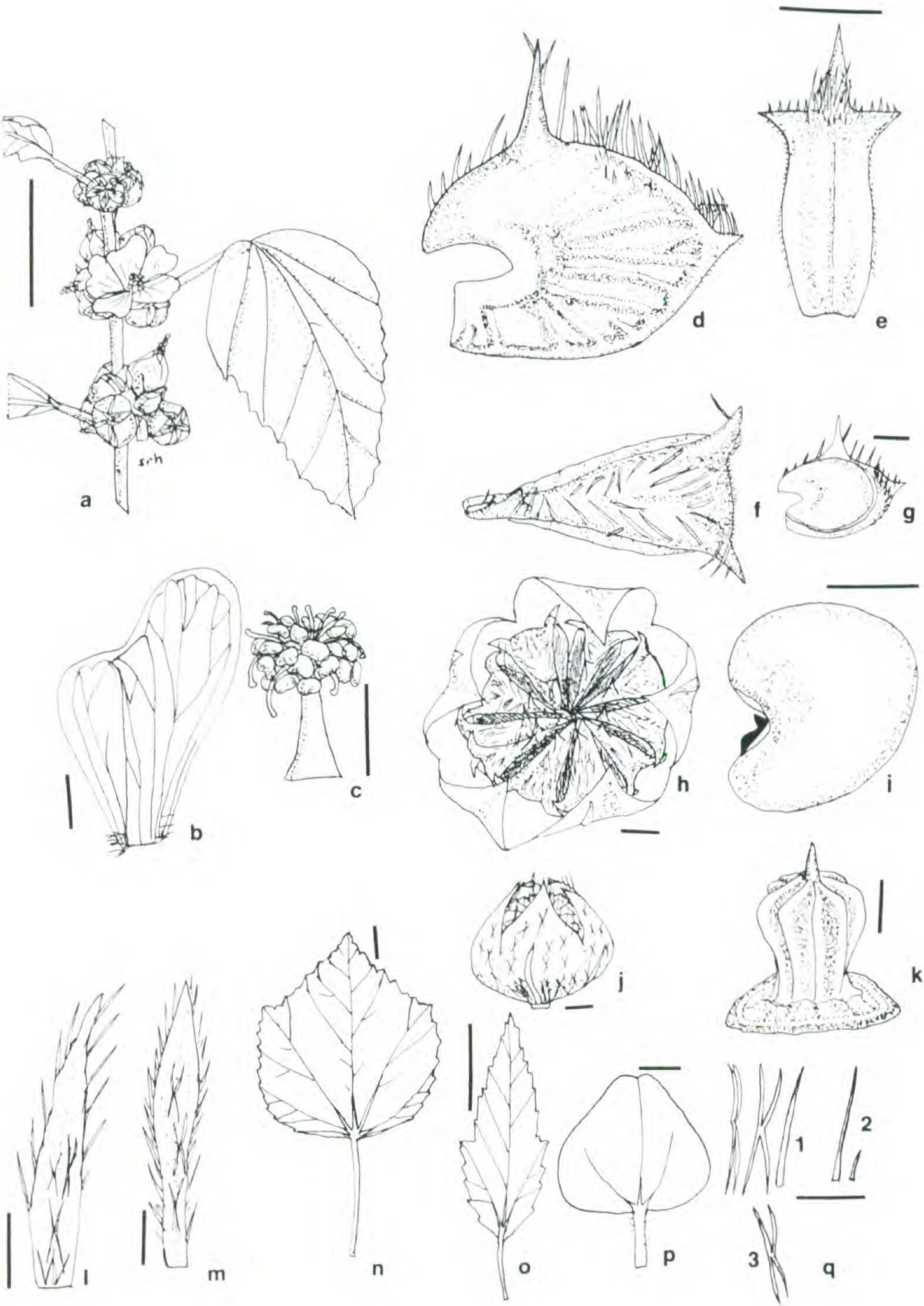
10343 (US): **SOCIETY ISLANDS**. RAIATEA: Uturoa, *Moore* 193 (MO, RSA); **MARQUESAS**. HIVA'OA: Hanamenu Valley, *Decker* 1294 (MO, RSA); NUKU HIVA: *Moore* 161 (US); UAPU: *Moore* 505 (US); UA HUKA: *Decker* 1476 (US); WASHINGTON ISLAND: *Bergman* 88 (UC); **TUAMOTU**. Raroia Atoll, *Doty & Newhouse* 11710 (US); **PITCAIRN ISLAND**. *Chapin* 989 (NY); **GAMBIER ISLANDS**. MANGARÉVA: *Agassiz et al.* 121 (GH, US); **EASTER ISLAND**. *Agassiz* 61 (GH).

13b. *Malvastrum coromandelianum* (Linnaeus) Garcke subsp. *capitato-spicatum* (O. Kuntze) S.R.Hill, *Brittonia* 32(4): 476. 1980. Fig. 67

Malveopsis coromandeliana (Linnaeus) Morong var. *capitato-spicatum* O. Kuntze, *Rev. Gen.* 3(2): 21. 1898. TYPE: Argentina. Córdoba: presumably *O. Kuntze*, not seen. See Hill (1980) for discussion. *Malvastrum tricuspidatum* (R. Brown in Aiton f.) A. Gray var. β *capitato-spicatum* (O. Kuntze) Stuckert, *Anales Soc. Ci. Argent.* 114: 28. 1932.

Malvastrum coromandelianum (Linnaeus) Garcke var. *congestum* R. E. Fries, *Ark. Bot.* 6 (2): 6. 1906. TYPE: Argentina. Jujuy: Quinta, in fields, 2 June 1901. *R. E. Fries* 69 (HOLOTYPE: s!). *Malvastrum tricuspidatum* (R. Brown in Aiton f.) A. Gray var. *congestum* (R. E. Fries) Stuckert, *Anales Soc. Ci. Argent.* 114: 28. 1932.

Suffruticose erect perennial or annual herb (0.3) 0.6–1.5 m tall; *main stem* (4) 6–7 (10) mm diam at base, branches up to 30–40 cm; *stem vesture* of longitudinally scattered narrowly bilateral closely appressed short-tuberculate (2–3) 4-rayed stellate hairs rarely mixed with simple hairs 1.0–2.0 mm long; *cotyledons* 13–15 mm long $\times$ 12–13 mm wide, wide-ovate, unlobed; *stipules* (4) 6–8 (10) mm long $\times$ 0.8–1.5 mm wide, subfalcate, lanceolate, acuminate; *petioles* 30–40 (55) mm long, to (8) 15–25 mm long in apical leaves; *blades* 1.4–2.0 (2.5) to 2.8–4.0 (4.7) $\times$ longer than the petioles in basal and apical stem leaves respectively, 60–90 (110) mm long $\times$ 40–60 (110) mm wide in lower stem leaves reduced to (25) 40–50 (75) mm long $\times$ (15) 20–30 (40) mm wide in upper leaves, average midstem blade (1.1) 1.4–1.8 $\times$ longer than wide, wide-ovate to ovate-lanceolate, unlobed or not infrequently shallowly 3-lobed 1/2 to 2/3 way from the broadly rounded subtruncate to wide-cuneate base, apex acute to acuminate, margin dentate to nearly serrate with 2–3 (4) teeth/cm, *vesture* of the adaxial surface of bilateral 4-rayed apically or marginally directed appressed stellate hairs (0.3) 0.5–1.0 mm long, abaxial surface similar; *flowers* not precocious, solitary in the axils of leaves and stipules but soon produced in congested axillary and terminal few to many-flowered glomerate or short-spicate racemes



throughout the upper half of the plant conspicuously separated by internodes 1–2 cm long, main branches usually with more than one open flower/day; bifid *floral bracts* lacking, flowers subtended by reduced leaves with stipules or by stipules alone; *pedicels* (1) 2–3 (15) mm long in young plants to 0.5–1.0 mm in inflorescences, not lengthening in fruit; *involucrel* of 3 lanceolate to narrowly lanceolate slightly falcate acuminate bracteoles 4–6 mm long $\times$ 0.5–0.7 mm wide united 0.5–1.0 mm basally to calyx; *calyx* united $2/5$ to $1/2$ its length, 5–6 mm long to 8–12 mm long in fruit, broadly campanulate, lobes slightly spreading in flower and erect or incurved in fruit, deltate-cuspidate, 3–4 mm long $\times$ 2–2.5 mm wide to 4–5 mm long $\times$ 3–4 mm wide in fruit, abaxial surface moderately to sparsely pubescent with primarily 4-rayed stellate hairs 0.3–1.5 mm long on the veins and a ciliate margin of simple hairs 0.5–1.2 (2.0) mm long, adaxial surface puberulent with minute arachnoid simple or obscurely stellate hairs on the apical $1/2$ to $2/3$ and marginally to the sinus; *corolla* yellow to pale golden-yellow, 15–17 mm diam when spread, wide-campanulate at anthesis or nearly rotate, the petals asymmetrically bilobed, 7–9 mm long $\times$ 5–6 mm wide exceeding calyx by 3 mm, claws ciliate on the basal margins with a few simple tufted hairs 0.4–0.6 mm long; *androecium* with 16–26 stamens, filament tube 0.9 mm long; *gynoecium* with 11–13 carpels, style branched 2–2.5 mm above the columella, each stigma conspicuously expanded and hemispherical to subglobose and subequal to slightly recurved below the anther cluster; *schizocarps* 5.5–6.5 (9) mm diam including ornamentation; *mericarps* 11–13, 3.0–4.5 mm in height $\times$ 3.0–4.0 mm in length $\times$ 1.3–1.5 mm in width including ornamentation, with a single medial-apical cusp 1.0–2.0 mm long 1.0–1.2 mm distal to the proximal margin and two distal-apical cusps (0.3) 0.4–0.7(1.0) mm

Figure 67. *Malvastrum coromandelianum* subsp. *capitato-spicatum*. a. Inflorescence habit, scale = 2 cm. b. Petal, scale = 2 mm. c. Stamens, styles and stigmas, scale = 2 mm. d.-f. Mericarp, lateral, distal and apical views, scale = 1 mm. g. Mericarp, internal view, scale = 1 mm. h. Fruit, apical view, scale = 2 mm. i. Seed, lateral view, scale = 1 mm. j. Calyx in fruit, lateral view, scale = 1 mm. k. Columella, scale = 0.5 mm. l. Stipule, scale = 1 mm. m. Bracteole, scale = 1 mm. n. Leaf, midstem of young vegetative plant, scale = 2 cm. o. Leaf, upper stems, second year plant, scale = 2 cm. p. Cotyledon, scale = 5 mm. q. Hair types, 1) stem, 2) mericarp, 3) leaf, scale = 0.5 mm. (a-b, d-i, l-p from plants grown from *Varela* 52; c, j-k from plants grown from *Morel* 5794; q from *Fries* 69.) Reprinted from Hill, 1980.

long conspicuously divergent from one another, lateral faces conspicuously ribbed especially on the margins, vestiture of the apical surface and cusps of rigid simple hairs 0.6–1.0 mm long infrequently mixed with a few minute 2–5-rayed stellate hairs 0.05 mm diam, lateral faces glabrous or a few minute hairs near apex, distal surface with a raised medial line and minutely pubescent with medial and marginal simple or stellate hairs, mericarp indehiscent or loosely sealed along the proximal-apical margin, endoglossum lacking, readily shed from the receptacle and calyx at maturity; *seeds* 1.7–2.0 mm in height $\times$ 1.8–2.1 mm in length $\times$ 0.7–0.9 mm in width; *chromosome number*: $n = 12$, $2n = 24$; *pollen* 72–94.7 (80.7) μm diam, *echinae* 4–7.7 μm , apertures ca. 15–20.

Distribution. (Fig. 66) Occurring in the foothills and montane regions from Prov. Córdoba and San Juan, Argentina in the south to Salta and Formosa, Argentina in the north and in isolated stations to Cochabamba, Bolivia, and the Galápagos Islands from near sea level (in the Galápagos) to 400–2600 m.

Phenology and reproductive biology. Flowering March to May (local autumn) or infrequently as early as December; specimens collected in June and July bore old fruits only. Plants grown from seeds as much as 34 years old (*Fosberg* 44742, *Luna* 1170, *Morel* 5794, and *Varela* 52) germinated 4–6 days after planting and produced their first flowers after 40–60 days flowering continuously after that time until cold conditions caused them to become dormant. The progeny of *Fosberg* 44742 grew to over 1 m before producing its first flowers (after 90 days growth) in September. In the other plants flowers were produced when at a height of 30–40 cm. The flowering period locally was 2–2:30 pm CST to 4–4:15 CST and the flowers closed before those of subsp. *coromandelianum* opened. The pollen was generally released directly onto the stigmas or the stigmas were dusted with pollen as the flowers wilted. Fruits matured in 17–21 days after pollination.

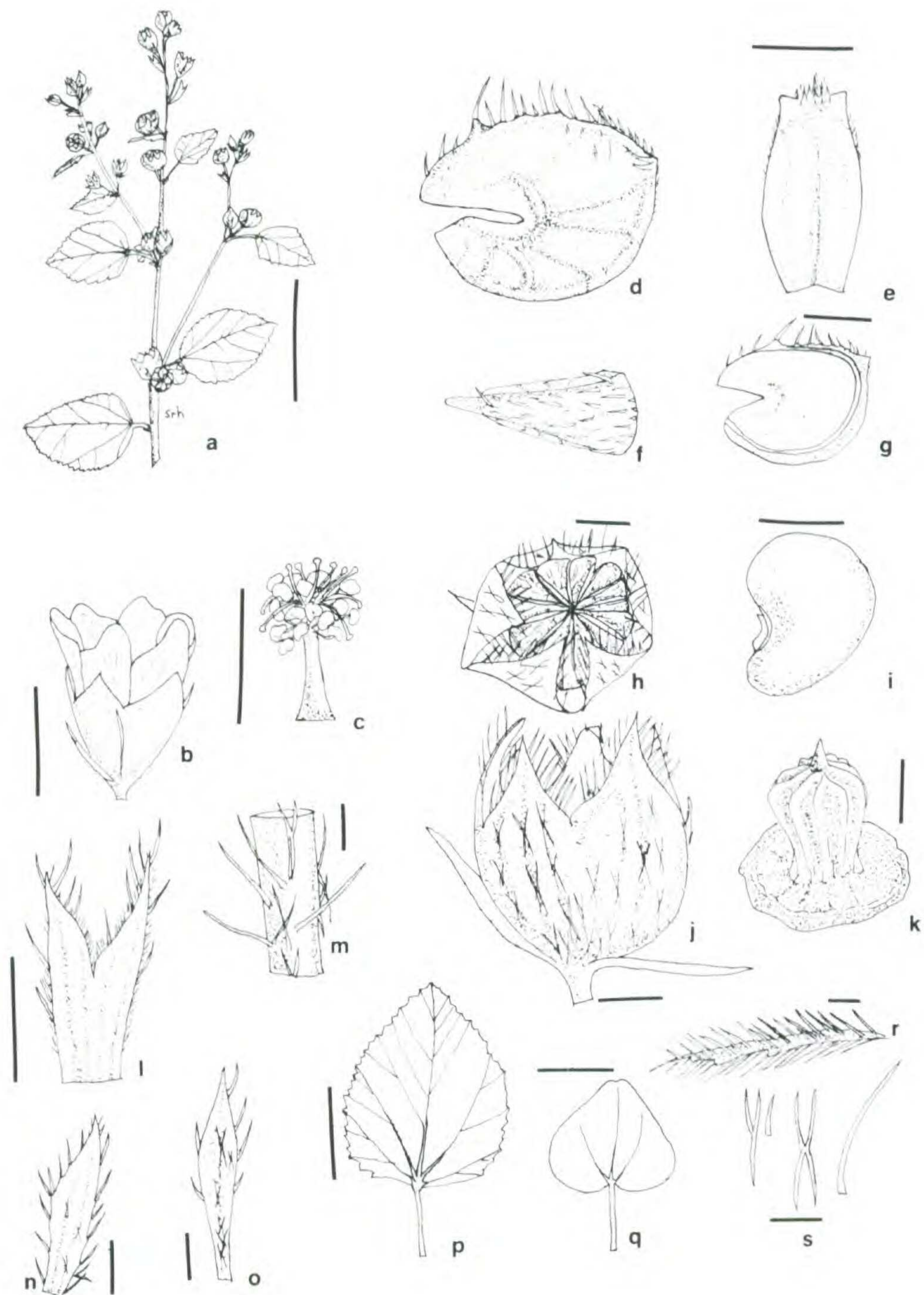
Discussion. This is a biological rather than a morphological subspecies since such characters as mericarp morphology and vestiture are nearly indistinguishable from subsp. *coromandelianum*. From an early age plants produce glomerate axillary inflorescences and have large leaves that are the size (and sometimes the shape) of those of *Malvastrum americanum*; the flowers open (locally) early in the

afternoon, are almost exclusively autogamous, and close before those of *M. coromandelianum* subsp. *coromandelianum* open. The subspecies are separated by this phenological isolating mechanism. *Malvastrum coromandelianum* subsp. *capitato-spicatum* is best distinguished from subsp. *coromandelianum* by its dense, glomerate axillary inflorescences, much larger leaves (at least in youth), its adaxial leaf vestiture of 4-rayed hairs only, its larger size, its very prominently cuspidate fruits (the cusps never reduced) and its occurrence primarily in the low sierra of north-central Argentina.

REPRESENTATIVE SPECIMENS: **ECUADOR**. GALÁPAGOS ISLANDS: Indefatigable Island (Santa Cruz), *Fosberg 44742* (MO); James Island (San Salvador), *Howell 9686* (CAS, GH); Chatham Island, *Howell 8518* (CAS); Charles Island, *Howell 9310* (CAS, K); **BOLIVIA**. COCHABAMBA: valle del Cercado de Cochabamba, *Steinbach 185* (SMU); **ARGENTINA**. CATAMARCA: Dpt. La Paz, Taco Pampa, *Brizuela 643* (MO); Dpt. Ancasti, Los Barriales, *Brizuela s.n.* (C, NY, RSA); Dpt. Andalgalá, edge of Río del Quebrado del Cura, 40 km W of Andalgalá, *Cantino 794* (GH); CÓRDOBA: Dpt. Córdoba, Gutemberg, *Bartlett 19878* (GH, MICH, UC, US); Córdoba, *Galander s.n.* (G, MO, NY, US); Dpt. Capital, Los Cuarteles, *Terribile 667* (SMU); FORMOSA: Dpt. Pilcomayo, Ruta 86, 2 km N of km 45, *Morel 5794* (MO, US); JUJUY: Dpt. Capital, Yala, *Krapovickas & Schinini 30718* (G); MENDOZA: Luján, *Leal 10152* (C); SALTA: Dpt. Viña, Coronel Moldes, *Hunziker 1135* (US); Dpt. Anta, Quebrachal, *Luna 117* (GH, MO); SAN JUAN: Dpt. Santa Lucia, *Cuezzo 2233* (SMU); SANTIAGO DEL ESTERO: Dpt. Surnampa, *Balegno 109* (NY); Dpt. Capital, *Lillo 41* (A, GH, UC); Dpt. Robles, Colonia Jaimes, *Luna 1170* (MO); SANTE FE: Las Rosas, *Beetle 914* (CAS); TUCUMÁN: Dpt. Capital, Lujau, *Venturi 83* (US).

- 13c. ***Malvastrum coromandelianum*** (Linnaeus) Garcke subsp. ***fryxellii*** S. R. Hill, *Brittonia* 32(4): 480. 1980. TYPE: Brazil. Minas Gerais: 1 km. E of Río Pandeiros, road to Januária, elev. 520 meters, April 18, 1973. *W. Anderson, P. A. Fryxell, S. R. Hill, R. Reis dos Santos, & R. Souza 9096*, (HOLOTYPE: UB!; ISOTYPES: C!, K!, MO!, NY!, pf!, US!). Fig. 68, 69.

Herbaceous to suffruticose sparsely branched annual or perennial herb 0.4–1.0 m tall; *main stem* 3–9 mm diam at base, branches 30–60 cm long; *stem vestiture* of perpendicular swollen-based simple hairs 1.0–2.0 mm long mixed with closely longitudinally appressed scattered bilateral 4-rayed stellate hairs 1.0–2.0 mm long tardily shed in age; *cotyledons* 8 mm long × 9 mm wide, wide-ovate, briefly emarginate at the apex and subcordate at the base; *stipules* 6–9 mm long × 0.8–1.2 mm wide, subfalcate to falcate, lanceolate to narrowly lanceolate, acuminate; *petioles* 10–26 mm long; *blades* 2.0–3.5×



longer than the petioles, (30) 35–50 (60) mm long $\times$ (12) 25–40 (55) mm wide progressively reduced towards branch apices, average midstem blade 1.3–1.5 $\times$ longer than wide, ovate, unlobed, base sub-truncate broadly rounded to wide-cuneate, apex acute, margin denticulate with 5–7 teeth/cm, vesture of the adaxial surface consisting of apically directed ascending simple hairs imparting a velvety or felty texture to the fresh leaf, abaxial surface with scattered primarily simple hairs like those on the stem mixed with a few 3–4-rayed bilateral stellate hairs 0.6–1.0 mm long; *flowers* solitary in the axils of leaves and stipules, at maturity on reduced glomerate axillary racemes or congested at the stem apex or on racemose branches and subtended by bifid *floral bracts* 5–6 mm long $\times$ 2 mm wide; *pedicels* 1.5–2.0 mm to 4–5 (7) mm in fruit; *involucl* of 3 narrowly lanceolate acuminate bracteoles 4–5 mm long $\times$ 0.5 mm wide, nearly free or adnate to calyx in the basal 0.5 mm; *calyx* united 1/3 to 1/2 its length, 5 mm long to 7–8 mm in fruit, campanulate in flower and fruit, the lobes slightly spreading in flower to nearly erect or slightly incurved in fruit, deltate-cuspidate, 2–2.5 mm long $\times$ 1.5–2.0 mm wide to 5–6 mm long $\times$ 4–5 mm wide in fruit, abaxial surface sparsely pubescent with appressed 3–4-rayed bilateral hairs 0.5–1.0 mm long, veins and simple marginal hairs 0.4–0.8 mm long, adaxial surface minutely puberulent on the apical half and marginally to the sinus; *corolla* pale yellow-orange, 10–12 mm diam when spread, somewhat campanulate with slightly spreading lobes, petals asymmetrically bilobed, 6–7 mm long $\times$ 3 mm wide exceeding the calyx by 2 mm, claws pubescent at the basal margin with tufted simple hairs 0.1–0.5 mm long; *androecium* with 22–31 stamens, filament tube 1.5–2.0 mm long, glabrous, free portion of filaments 1.0 mm long; *gynoeceium* with 10–11 carpels, the style branched 2.0 mm above the colu-

Figure 68. *Malvastrum coromandelianum* subsp. *fryxellii*. **a.** Habit, scale = 5 cm. **b.** Flower, scale = 5 mm. **c.** Stamens, styles and stigmas, scale = 2 mm. **d.-f.** Mericarp, lateral, distal and apical views, scale = 1 mm. **g.** Mericarp, internal surface, scale = 1 mm. **h.** Fruit, apical view, scale = 2 mm. **i.** Seed, scale = 1 mm. **j.** Calyx in fruit, scale = 2 mm. **k.** Columella and carpocrater, scale = 0.5 mm. **l.** Floral bract, scale = 2 mm. **m.** Stem vesture, scale = 1 mm. **n.** Stipule, scale = 2 mm. **o.** Bracteole, scale = 2 mm. **p.** Midstem leaf, scale = 2 cm. **q.** Cotyledon, scale = 0.5 mm. **r.** Leaf in profile, vesture orientation, scale = 1 mm. **s.** Hair types of leaves, scale = 0.5 mm. (a from *Heringe 11483*; b-c, h, j-k, m, q and r from progeny of *Anderson, et al. 9096*; d-g, i, l, n-p, and s from *Anderson, et al. 9096*.) Reprinted from Hill, 1980.

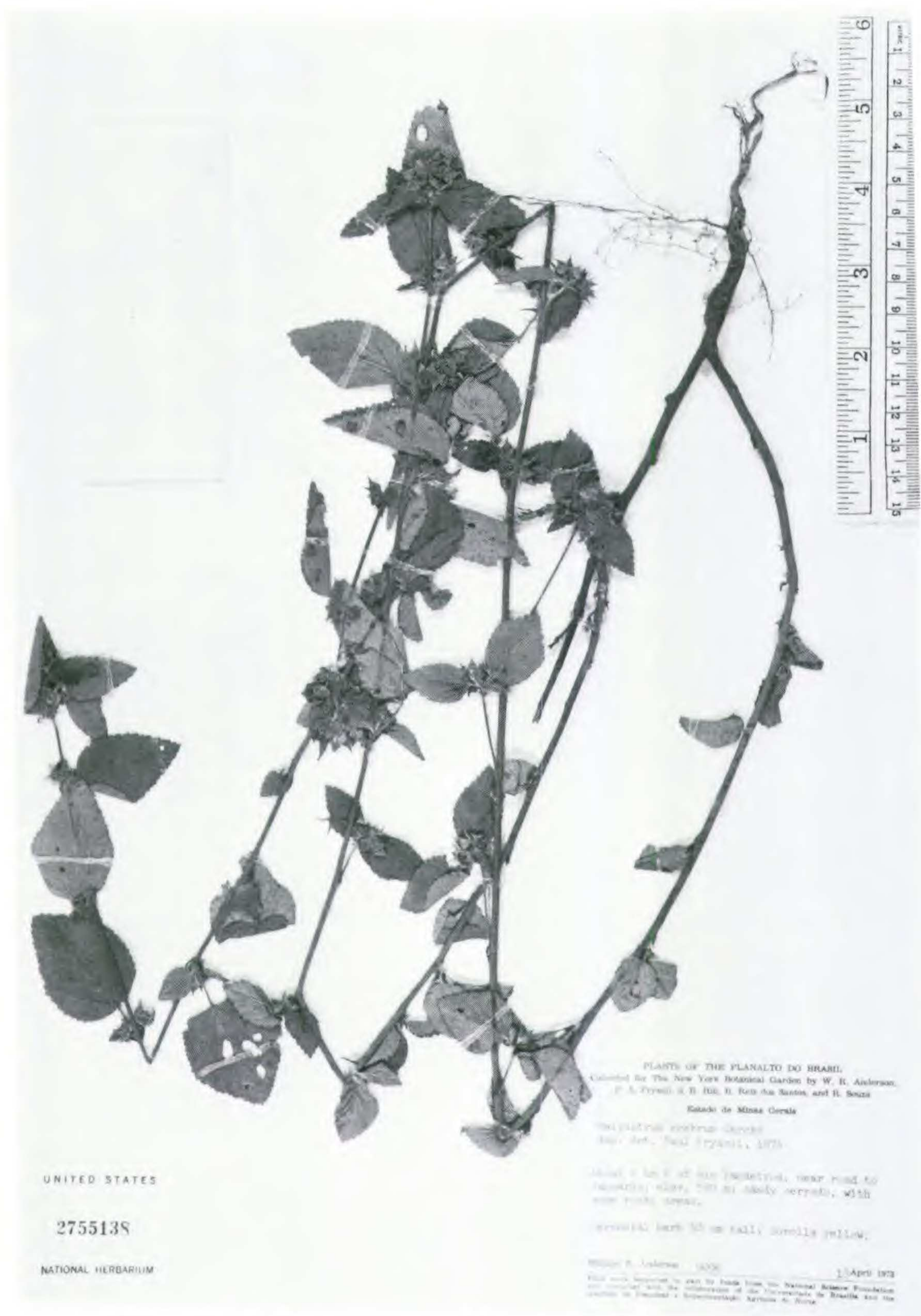


Figure 69. *Malvastrum coromandelianum* subsp. *fryxellii* (isotype, US).

mella, each stigma conspicuously expanded and hemispherical to subglobose exerted 1.0 mm but recurved at flower wilt; *schizocarps* 5.0 mm diam including ornamentation; *mericarps* 10–11, 1.5–2.0 mm in height $\times$ 2.0 mm in length $\times$ 0.8–1.0 mm in width, with a small medial-apical cusp 0.2–0.4 mm long 0.8 mm distal to the proximal margin and 2 distal-apical cusps 0.1–0.2 mm long, lateral surfaces somewhat ribbed, distal-basal surface with an obscure raised medial line, vestiture of the apical surface of rigid simple hairs 0.4–0.8 mm long, lateral and distal surfaces with a few apical minute simple hairs, mericarp indehiscent but loosely sealed or slightly dehiscent along the proximal-apical margin, endoglossum absent, readily or tardily shed depending on the orientation of the calyx lobes; *seeds* 1.4 mm in height $\times$ 1.3 mm in length $\times$ 0.7–0.8 mm in width; *chromosome number*: $2n = 24$; *pollen* 77–93 (84.3) μm diam, *echinae* 6–7 μm , apertures ca. 15–20.

Distribution. (Fig. 66) Known only from the Planalto region of south-central Brazil in the states of Goiás and Minas Gerais, with one specimen tentatively assigned here from Aragua, Venezuela (perhaps introduced), at elevations of 450–550 m.

Phenology and reproductive biology. Flowering March to June. Specimens grown from seed (Anderson *et al.* 9096) germinated in 4 days and produced their first flowers after 4 months of slow growth (120 days, in late October). The flowers opened at 3:30–3:45 pm CST and closed at 5:15–5:30 pm CST, after those of subsp. *capitato-spicatum*. A reliance on self-pollination is suggested by the approximate stigmas and anthers, but cross-pollination is also likely. Emasculated flowers did not set fruit.

Discussion. *Malvastrum coromandelianum* subsp. *fryxellii* is most closely allied to subsp. *capitato-spicatum* as seen in its somewhat glomerate inflorescences, but has several derived characters. These include the predominance of simple hairs, the presence of bifid floral bracts in age, and the small mericarps with reduced cusps. It probably represents a fairly ancient introduction to the Brazilian Planalto from the southern Pampean massif region. The reduction in cusp size probably occurred in its isolation and has prevented it from further extensive dispersal except in disturbed soils.

SPECIMENS EXAMINED. **VENEZUELA.** ARAGUA: University Central de Venezuela, Maracay, *Croat* 21342 (MO); **BRAZIL.** GOIÁS: Gob. Goiás, Goiás, *Burchell* 6925 (BR, K); Gob. Formosa, Río Tiquiri, *Heringe* 11483 (NY, srh, UB); MINAS GERAIS: 1 km E of Río Pandeiros, road to Januária, *Anderson et al.* 9096 (C, F, K, MO, NY, pf, US); Paraopeba, *Heringer* 9360 (UB) and 9457 (UB); Lagoa Preta, *Heringer* 6596 (UB).

Section 7. *Corchorifolium*

Malvastrum sectio **Corchorifolium** S. R. Hill, *sect. nov.*

Carpella matura 9–16, dehiscentia margine proximali-apicale solum, superficie apicale pilis stellatis minuto et simplicibus, muris lateralis pericarpium crassis, ornata 2 mucronibus distali-apicalibus vel cuspidibus parvis 0.02–0.4 mm longis et mucrone unico mediali-apicale 0.02–0.4 mm longo, marginibus pericarpium angulatis, endoglosso minuto praesente; stamina 16–39, columnis staminalibus pubescentibus sparsim; flores solitariae axillares primo, demum in spicis parvis terminalibus; bracteolis involucellis adnatis basi calyce; bracteae florales bifidae praesentes; pili caulini stipitates nunquam; pollinis grana 15–25 aperturis; sectio origine hybrido probabiliter. TYPUS: *Malvastrum corchorifolium* (Desrousseaux in Lamarck) Britton ex Small.

The solitary axillary and later spicate flowers, indehiscent or weakly dehiscent thick-walled trimucronate mericarps, minute endoglossum, presence of bifid floral bracts, pubescent filament tube, and 15–25 aperturate pollen characterize the section *Corchorifolium*, a section of probable hybrid origin.

14. **Malvastrum corchorifolium** (Desrousseaux in Lamarck) Britton ex Small, *Flora Miami*: 119. 1913. Fig. 70, 71.

Malva scoparia Jacquin, *Collect.* 1: 59. 1787; *Icon. Pl. Rar.* 1: 14, t. 139. 1787, non L'Heritier, 1786. TYPE: in the absence of type material, t. 139 is chosen as lectotype. The plant was apparently raised from seed collected by Jacquin in Hispaniola ("insula Domingo"). The figure shows a young plant of the species with typical 4-rayed hairs and reduced or absent cusps. *Malva corchorifolia* Desrousseaux in Lamarck, *Encycl.* 3: 755 (743 errore). 1792. Based upon *Malva scoparia* Jacquin, non L'Heritier.

Malva betulina Desrousseaux in Lamarck, *Encycl.* 3: 754. 1792. TYPE: plants raised at Hortus Parisiensis in part from seed sent by Martín, Santo Domingo. The holotype has a large branch of this species (HOLOTYPE: P-LA), presence of holotype confirmed by Krapovickas (pers. comm.).

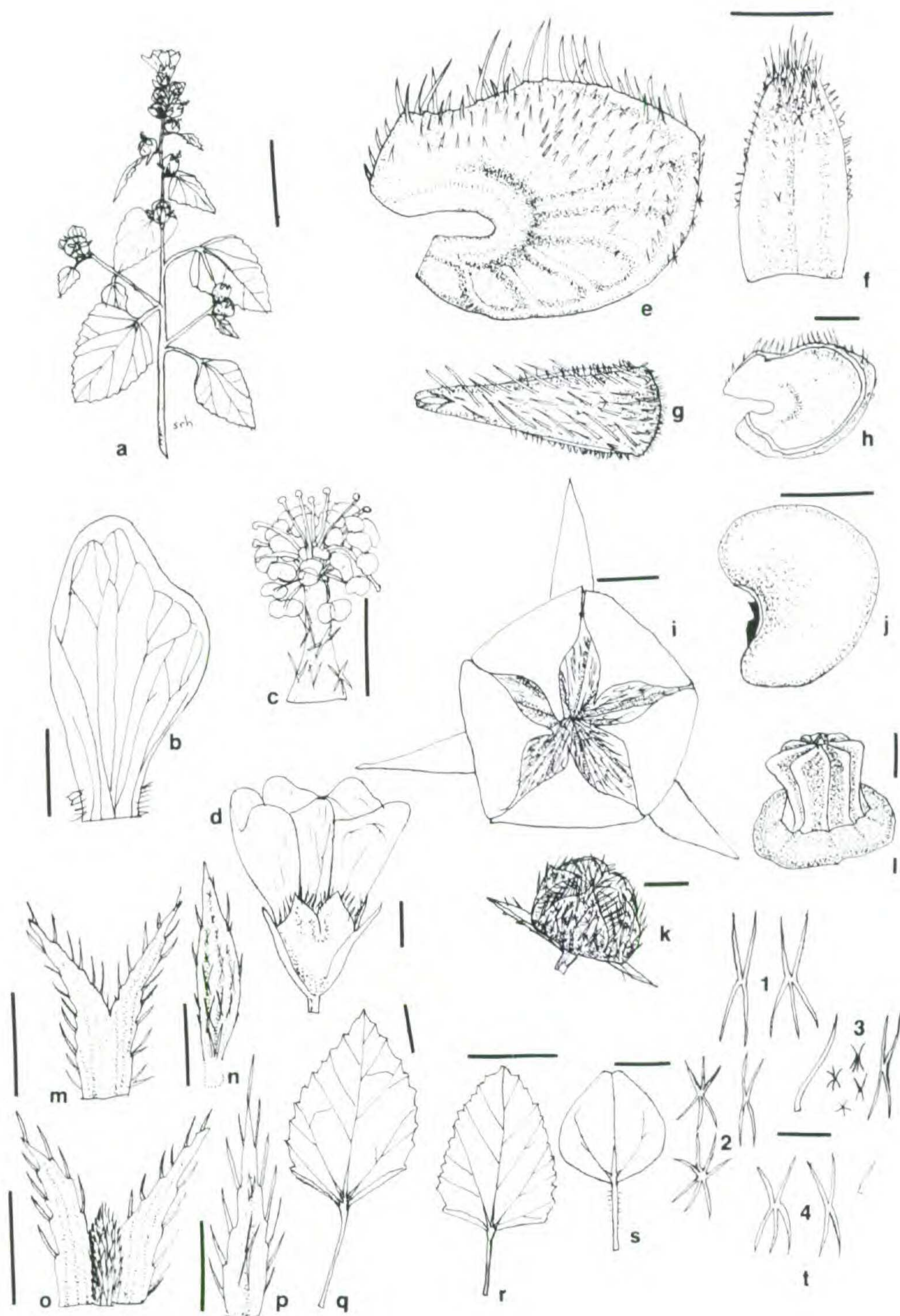
Malva americana sensu Willdenow, *Enum. Plant.*: 729. 1809, pro parte, non Linnaeus, 1753. This name, for the most part misapplied to *Malvastrum coromandelianum*, seems also to have included the present concept of *M.*

corchorifolium. A specimen in the Willdenow Herbarium (B-W) no. 12751, sheet 3, from Santo Domingo, is probably *M. corchorifolium*.

Malva ulmifolia Balbis ex De Candolle, Prodrômus 1: 430. 1824, pro syn., nomen nudum. This name was listed as a synonym of *Malva americana* by De Candolle, who cited a Balbis specimen (TO - photo srh!) that appears to be *M. corchorifolium*.

Malvastrum rugelii S. Watson, Proc. Amer. Acad. Arts 17: 367. 1882. TYPE: UNITED STATES. Florida: Manatee County, mouth of the Manatee River, calcareous soil, 1845. *F. Rugel* 90 (HOLOTYPE: GH!; ISOTYPES: BM!, CU!, G!, pfl., UC!, US!).

Annual or perennial sparsely branched herb to 0.6–1.5 (1.8) m tall often suffruticose in age; *stem* 4–7 mm diam at base; *branches* up to 50–75 cm long; *stem vesture* principally of swollen-based longitudinally scattered appressed 4-rayed hairs 0.8–1.5 mm long or similar 3- or 5-rayed hairs; *cotyledons* 9–10 mm long $\times$ 10–11 mm wide, ovate to wide-ovate, petioles ca. 9 mm long; *stipules* (2) 3–5 (7) mm long $\times$ 0.8–1.2 mm wide, lanceolate to narrowly lanceolate, slightly falcate, narrowly acuminate; *petioles* (5) 15–35 (70) mm long; *blades* 1.8–2.2 $\times$ longer than the petiole, (16) 30–50 (86) mm long $\times$ (8) 25–40 (75) mm wide, average midstem 1.5–1.6 $\times$ longer than wide, ovate, unlobed, base broadly-cuneate to somewhat rounded, apex acute to rounded, margin dentate with 2.5–4.5 teeth/cm, vesture of the adaxial surface of sparse 4–5-rayed stellate hairs 0.3–1.0 mm diam and a few minute marginal simple hairs, vesture of the abaxial surface similar but with more 5 (6)-rayed hairs (6-rayed being more frequent in Central American populations); *flowers* solitary in axils of leaves and stipules later spicate on branch apices, in the axils of bifid floral bracts intermediate structures or stipules with reduced leaves, occasionally in reduced 2–6-flowered spikes in upper leaf axils; *floral bracts* divided 1/2 to 2/3 their length, 3–6 mm long $\times$ 1.0 mm wide; *pedicels* (0.5) 1.0 (2.0) mm long scarcely increasing in fruit; *involucl* of 3 lanceolate acuminate slightly falcate bracteoles 4–6 (8) mm long $\times$ 0.8–1.0 mm wide united to calyx in basal 0.5–1.0 mm; *calyx* united 1/4 to 1/3 its length, 5–6 mm in height to 7–11 mm in fruit, broadly campanulate, lobes erect in flower and incurved in fruit, deltate-cuspidate, (3) 5–6 (7) mm long $\times$ (2) 3–4 mm wide, moderately pubescent on the abaxial surface primarily with rigid simple and 2–4-rayed hairs 0.5–1.2 mm long directed apically mixed with distinctly smaller scattered 4–6-rayed stellate hairs 0.05–0.2 mm diam (the hair types varying in proportion in different



populations but always of two distinct sizes), adaxial surface with a few minute arachnoid simple hairs near the margin and in the apical 1/4; *corolla* yellow to pale yellow-orange, broadly campanulate to nearly planar, petals asymmetrically bilobed, (5) 6–7 (8) mm long $\times$ 3–4 mm wide exceeding calyx by 2.0 mm, claws sparsely pubescent at the margins with simple hairs 0.2–0.3 mm long; *androecium* with (16) 23–33 (39) stamens, tending towards 25 and 30, filament tube 1.8–2.5 mm long, sparsely pubescent with appressed 2–4-rayed hairs 0.5 mm long, free portion of filaments 0.9–1.0 (1.5) mm long; *gynoecium* of (9) 11–13 (16) carpels, style branched 2 mm above the columella, each stigma subglobose to hemispherical and expanded raised above the anthers by 0.5 mm, occasionally recurved at anthesis and all recurved upon wilting; *schizocarps* (4.0) 5–6.5 (7.0) mm diam; *mericarps* (9) 11–13 (16), 2.0–2.5 mm in height $\times$ (2.2) 2.5–3 (3.5) mm in length $\times$ 1.0–1.2 mm in width, with 3 minute cusps (0.02) 0.1–0.2 (0.4) mm long, one on the proximal-apical surface but remote from the margin and two on the distal-apical surface, lateral faces moderately to strongly ribbed, moderately to densely pubescent on the apical distal and marginal third with minute simple or 2-rayed erect hairs, apical surface moderately pubescent with rigid erect simple hairs 0.5–1.0 mm long and sparse minute simple or 2–3-rayed stellate hairs, mericarp indehiscent except in the proximal-apical margin which is usually unsealed at maturity and occasionally somewhat tardily dehiscent in the proximal-basal region along the medial line, endoglossum 0.1–0.2 mm long, mericarps readily separating from the receptacle at maturity but often retained

Figure 70. ***Malvastrum corchorifolium***. **a.** Habit, scale = 5 mm. **b.** Petal, scale = 2 mm. **c.** Stamens, styles, and stigmas, scale = 2 mm. **d.** Flower, scale = 2 mm. **e.-g.** Mericarp, lateral, distal, and apical views, scale = 1 mm. **h.** Mericarp, internal view, scale = 1 mm. **i.** Fruit, apical view, vesture of calyx excluded, scale = 2 mm. **j.** Seed, scale = 1 mm. **k.** Fruit, vesture included, scale = 2 mm. **l.** Columella and carpocrater, scale = 0.5 mm. **m.** Floral bract, adaxial surface, scale = 2 mm. **n.** Bracteole, scale = 2 mm. **o.** Transitional bract, adaxial surface, scale = 2 mm. **p.** Stipule, abaxial surface, scale = 2 mm. **q.** Leaf, young vegetative plant, scale = 2 cm. **r.** Leaf of mature plant, scale = 2 cm. **s.** Cotyledon, scale = 5 mm. **t.** Vesture: 1) stem, 2) leaf, abaxial surface, 3) calyx, 4) leaf, adaxial surface, scale = 0.5 mm. (a, p from progeny of *Molina* 27248; b-d, i-k, from progeny of *Lakela & Pardue* 31750; e-g, l, n, r from *Correll* 43867; h from *Molina* 11631; m, t from *Molina* 23070; o from *Correll & Evans* 44026; q from *Correll* 46320; s from progeny of *Contreras* 5588).

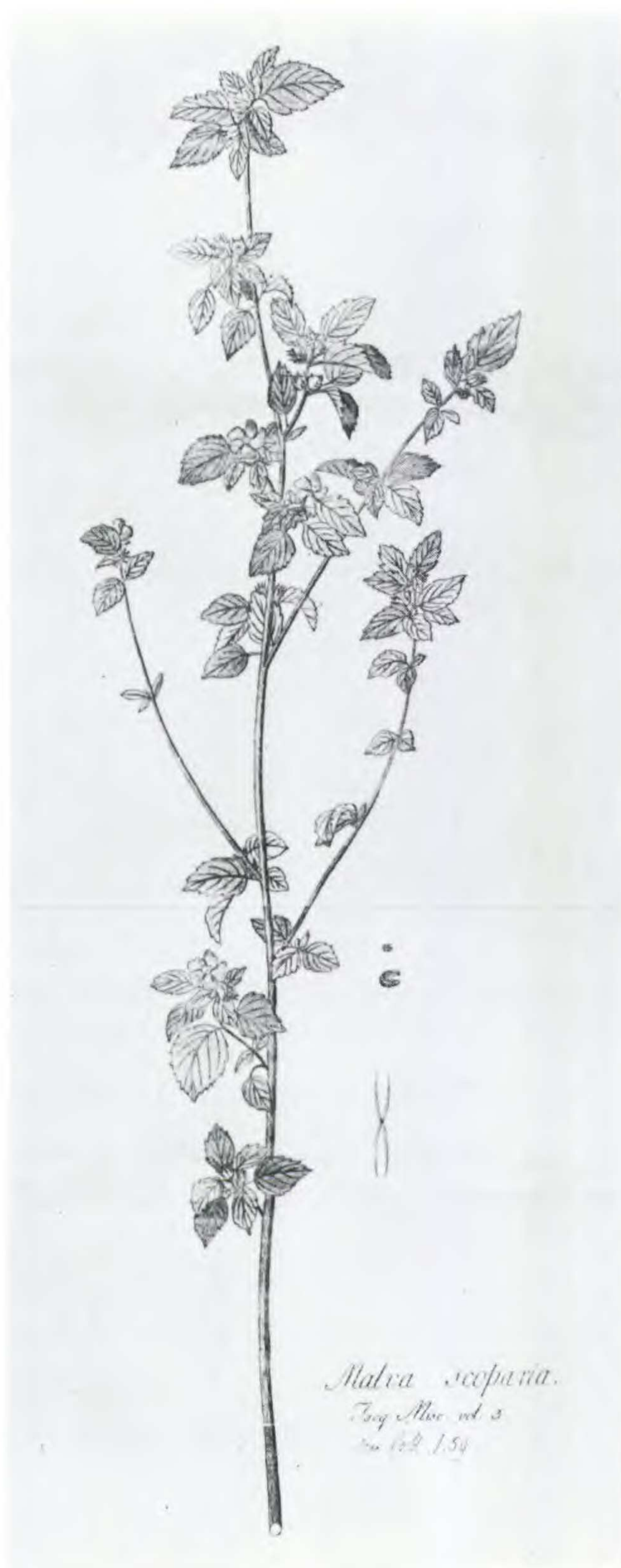


Figure 71. **Malvastrum corchorifolium** (lectotype, Jacquin, Icon. Pl. Rar. 1: *t.* 139. 1787).

for a period by the incurved sepals; *seeds* 1.5–1.7 mm in height $\times$ 1.6–1.8 mm in length $\times$ 0.8–1.0 mm wide; *chromosome number*: $n = 24$, $2n = 48$; *pollen* 74.5–103 (89) μm diam, *echinae* 5–7 μm , apertures ca. 15–25.

Distribution. (Fig. 72) Found in generally coastal calcareous soil in the Caribbean area from Florida and the Bahamas in the north, east to the Lesser Antilles, west to Tabasco, Mexico and south in interior regions to Nicaragua, with a few introduced populations in the Cape Verde Islands and Ghana, at elevations from sea level to 1000 m.

Phenology and reproductive biology. Flowering and fruiting primarily from late October to late February in the Caribbean, but also flowering occasionally after rain throughout the year. Specimens from Chiapas were in flower August–September. In the greenhouse locally, progeny from Central American populations flowered three months (90–100 days) after germination, becoming dormant during the summer, and flowered again in the autumn. Progeny from Florida and the Caribbean that germinated at the same time in the spring did not flower until late autumn (October) continuing through the winter as in wild populations. The seeds (some as old as 46 years, i.e. *Steere 1010*) germinated in 5–14 days. The flowers opened in the late afternoon ca. 4 pm CST and closed at or before sunset at 6–6:15 pm CST. The time shifted an hour more or less according to seasonal daylength, but the duration was constant. The flowers always self-pollinated due to the close proximity of the stigmas and the anthers. Fruits mature in 24–36 days from pollination.

Discussion. About 30% of the specimens of *Malvastrum corchorifolium* examined had been misdetermined under the names *M. americanum* or *M. coromandelianum* depending on the maturity of the inflorescence. Once the chromosome number was confirmed as $2n = 48$ there was little doubt that this was a distinct species. An analysis of morphological characters demonstrated that the species possessed a mixture, in varying proportions, of characters exhibited by both *M. americanum* and *M. coromandelianum* (see discussion under phylogeny). The range of *M. corchorifolium* suggested that it was likely of Central American origin, and had expanded into the Caribbean, where it became particularly frequent on coastal lime-

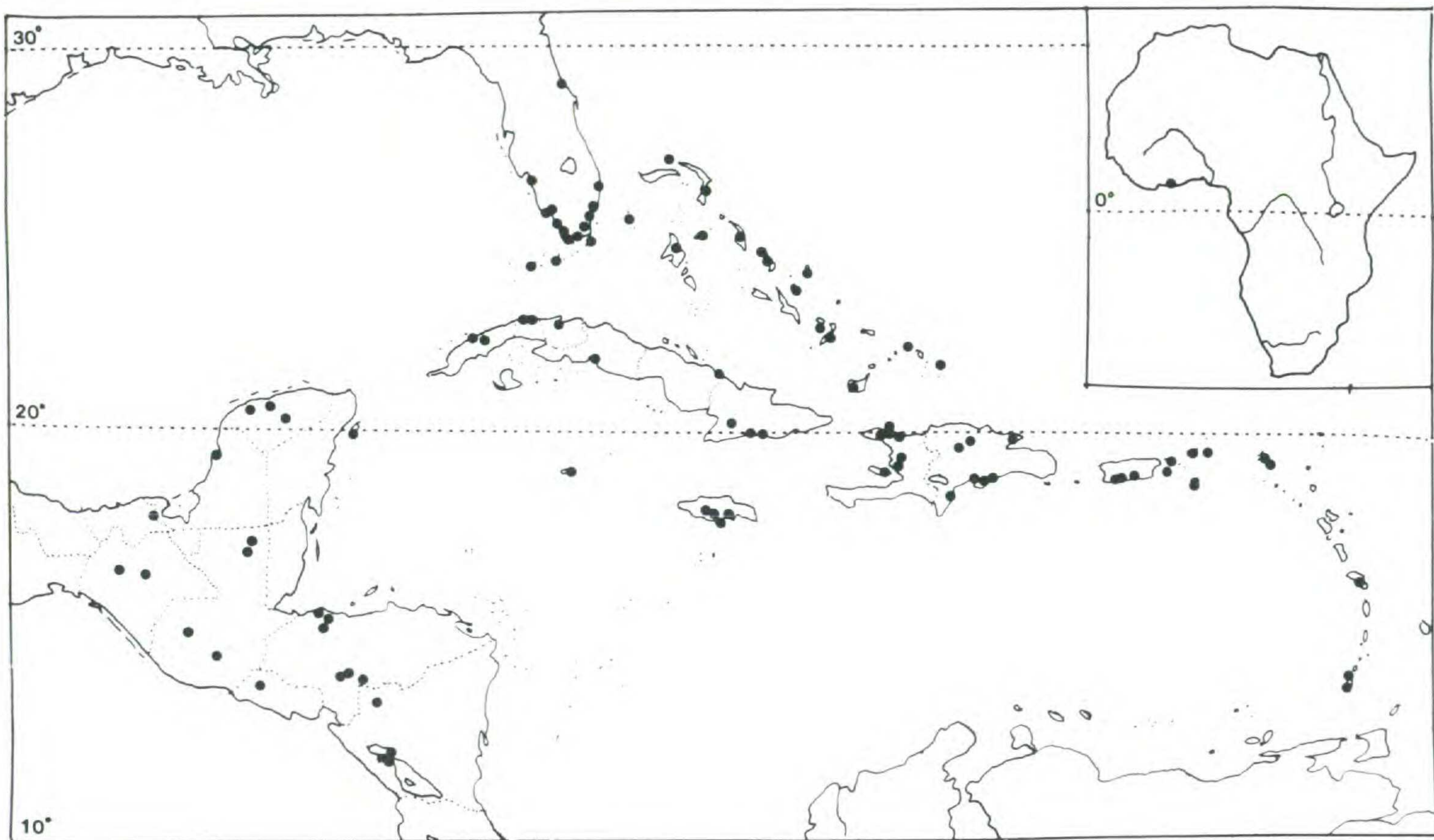


Figure 72. Distribution of *Malvastrum corchorifolium*.

stones. Formerly overlooked populations of the species from Nicaragua north through Mexico now support this hypothesis. I have proposed that *M. corchorifolium* is an allopolyploid derivative of *M. americanum* and *M. coromandelianum* and that it probably appeared in Central America after the appearance of the land bridge that increased the chance of hybridization between the two parental species.

Malvastrum corchorifolium is readily distinguished from *M. americanum* by its frequent bilateral 4-rayed hairs on all parts, by its sparse vestiture on the calyx and leaves, by the unlobed leaves, and by the more densely pubescent mericarps (particularly on lateral surfaces) that often have three small mucros. It can be readily distinguished from *M. coromandelianum* where the ranges overlap by the lack of simple hairs on the adaxial leaf surface, by the dimorphic hairs of the calyx, by the reduced cusps, and by the spicate inflorescence that at maturity often has bifid bracts. *Malvastrum corchorifolium* is the most frequent *Malvastrum* in calcareous parts of the Caribbean. The disjunct population in Ghana, present since at least 1927 (Newton & Kisseadoo, 1978) was possibly introduced from the Caribbean during slave-trade along that particular region in Africa.

REPRESENTATIVE SPECIMENS: **UNITED STATES.** ALABAMA: Mobile Co., ballast at Mob. & O. Wharf, Mobile, adventive from Jamaica, *Mohr* 35 (US); FLORIDA: Volusia Co., Turtle Mound Monument, south New Smyrna Beach, *Lakela & Pardue* 31750 (DS, MO); Brevard Co., New Found Harbor, Cocoa, Cocoa Beach Rd, *Rhoads* s.n. (FLAS); Hillsborough Co., waste ground, *Fredholm* 6407 (GH); Manatee Co., mouth of the Manatee River, Palmetto, *Nash* 2462 (DAO, G, GH, MICH, MO, NCU, NY, PH, US); Lee Co., western Sanibel Island, *Brumbach* 6081 (FLAS, US); Palm Beach Co., Palm Beach, *Hitchcock* 202 (F); Broward Co., N of Hollywood Beach, Hollywood, *Churchill* s.n. (SMU); Collier Co., Marco Island, north end, *Lakela* 27771 (FLAS, FSU, RSA, SMU); Dade Co., Miami, *Garber* 80 (BUF, F, GH, MO, NY, PH, US, VT); southwest Miami, *Hill* 3491 (pf, srh); Monroe Co., Big Pine Key, Watson Hammock, *Killip & Dickson* 41601 (BH, CAS, F, GA, MICH, NY); Big Pine Key, *Lakela* 27892 (GH).

BAHAMAS. ABACO: Cherokee Settlement, *Brace* 2072 (F, NY); ACKLIN'S ISLAND: Duncan Hill, *Brace* 4483 (F, NY); ANDROS: Nicholls Town, *Correll & Evans* 44026 (FTG, NY); BIMINI: Cat Cay, north end, *Correll & Correll* 45577 (F, FTG, NY, SMU); CAT ISLAND: The Bight and vicinity, *Britton & Millspaugh* 5850 (F, NY); ELEUTHERA: Rock Sound, *Britton & Millspaugh* 5567 (F, NY); FORTUNE ISLAND: *Hitchcock* s.n. (MO); INAGUA: Matthew Town, *Gillis & Proctor* 12176 (A); LONG CAY: south side, *Brace* 4114 (F, NY); NEW PROVIDENCE: Nassau, *Curtiss* 47 (F, G, GH, MO, VT); RUM CAY: between Cistern and Port Nelson, *Correll & Wasshausen* 46752 (F, FTG); SAN SALVADOR ISLAND: 1 mi. S of Finger Lake station, *Correll* 43867 (F, FTG, NY); GRAND TURK: the ponds, *Millspaugh & Millspaugh* 8999 (G, GH, NY); CAICOS ISLANDS: North Cai-

cos, W side of Whitby, *Correll* 43267 (FTG, NY); ANGUILLA ISLES: Salt Key Bank, *Wilson* 8065 (F, NY); **CUBA**; CAMAGUEY: Cayo Sabinal, Jatovieja, *Shafer* 1054 (NY, US); HABANA: near Mayay, *Baker & Wilson* 337 (GH, POM, US); LAS VILLAS: Cienequita, dist. Cienfuegos, *Combs* 90 (GH, MICH, MO, NY, US); MATANZAS: from Tomory Valley to Matanzas, *Rugel* 37 (MO, NY in part, pf); ORIENTE: Rente, Santiago Bay, *Clemente* 2734 (GH); PINAR DEL RÍO: Buenaventura, *Wilson* 9397 (NY, US); **HAITI**. GONAVE ISLAND: Anse Galette, *Leonard* 3225 (NY); NORD: St. Michel de l'Atalye, *Leonard* 7339 (MO, US); ARTIBONITE: Ennery-Rilboreau road, *Leonard* 8831 (F, GH, UC, US); TORTUE ISLAND: La Vallée, *Leonard & Leonard* 11328 (GH, MO, UC, US); **DOMINICAN REPUBLIC**. SANTIAGO: Hato del Yaque, Santiago, Valle de Cibao, *Ekman* 16142 (A, B, F, G, GH, NY, US); SANTO DOMINGO: Santo Domingo, *Ekman* 11417 (B, TEX, US); **PUERTO RICO**. Yauco, *Sintenis* 3567 (G, GH, GOET, NY, US); Vieques Island, vicinity of Isabel Segunda, *Shafer* 2415 (NY, US); Culebras Island, *Millspaugh* 611 (F); **VIRGIN ISLANDS**. ST. CROIX: Granard Road, *Fosberg* 54111 (US); ST. THOMAS: *Holton* s.n. (NY); VIRGIN GORDA: *Fishlock* 190 (GH); TORTOLA: Paraquita Holding Ground, *D'Arcy* 394 (A); **JAMAICA**. MIDDLESEX: Clarendon Parish W end of Round Hill, *Proctor* 9470 (GH); SURREY: Kingston, *Britton & Hollich* 1744 (NY); **CAYMAN ISLANDS**. CAYMAN BRAC: the creek, *Millspaugh* 1167 (F, NY); GRAND CAYMAN: *Hitchcock* s.n. (MO); **ANGUILLA**. Crocus Bay, *Proctor* 18585 (A, TEX); **ST. BERTHÉLEMY**. St. Jean, *Questel* 242 (NY); **MARTINIQUE**. Grand Riviere, *Kimber* 489 (WIS); **GRENADINES**. ISLE OF RONDE. *Howard* 10722 (GH); GRENADA: Sport Lands, *W.* 210 (A).

MEXICO. CAMPECHE: Campeche, *Perrine* s.n. (K, NY); QUINTANA ROO: Cozumel Island, *Lewis* 6876 (MO, NY); TABASCO: 20 mi. N of Villahermosa, *Fryxell* 733 (BH, F, MO, pf, UC); YUCATAN: *Valdez* 22 (CAS, GH, K, MICH, MO, NY, US); Chichen Itzá, in clearing, *Steere* 1010 (G, MICH, MO); CHIAPAS: San Cristóbal las Casas, *Breedlove* 14065 (DS, pf); **BELIZE**. Corozal-St. Helena Rd., *Lundell* 4825 (BH, MICH); **GUATEMALA**. PETÉN: Uaxactún, *Bartlett* 12348 (MICH, US); Tikal Nat'l Park, Tikal, *Contreras* 5588 (MICH, US); GUATEMALA: Finca Breña, road between Guatemala City and Fiscal, *Standley* 59789 (F); QUICHÉ: near Sacapulas, *Standley* 62503 (F); **EL SALVADOR**. SAN MIGUEL: Hacienda San Antonio, *Calderón* 2129 (GH, US); **HONDURAS**. CORTES: banks of Río Chamelecón, road to Chamelecón, *Molina* 11631 (F, NY, TEX); OLANCHO: trail between Catacamas and La Presa N of Catacamas, *Standley* 18373 (F); TEGUCIGALPA: Morazán, near Suyapa, *Standley & Williams* 1413 (F); EL PARAÍSO: Yuscarán, *Standley* 25780 (F); YORO: Progreso, *Standley* 55101 (US); **NICARAGUA**. ESTELÍ: 8 km. W of Estelí along Estanzuela Creek, *Molina* 23070 (NY); 5 km. NW of Estelí, *Molina* 27248 (F); **MANAGUA**. 12 km. E of Managua, *Seymour* 6129 (NY); **GHANA**. *Hall* s.n. (srh).

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APPENDIX I.

Summary of *Malvastrum* distribution. Endemic taxa indicated by an asterisk (*).

NEW WORLD

UNITED STATES: *M. americanum* var. *americanum*; *M. aurantiacum**; *M. bicuspidatum* subsp. *bicuspidatum*; *M. corchorifolium*; *M. coromandelianum* subsp. *coromandelianum*; *M. hispidum**.

MEXICO: *M. americanum* var. *americanum*; *M. bicuspidatum* subsp. *bicuspidatum*; *M. bicuspidatum* subsp. *campanulatum**; *M. bicuspidatum* subsp. *oaxacanum**; *M. bicuspidatum* subsp. *tumidum* var. *tumidum**; *M. bicuspidatum* subsp. *tumidum* var. *glabrum**; *M. corchorifolium*; *M. coromandelianum* subsp. *coromandelianum*.

BELIZE: *M. americanum* var. *americanum* (possibly occurs); *M. corchorifolium*; *M. coromandelianum* subsp. *coromandelianum*.

GUATEMALA: *M. americanum* var. *americanum*; *M. corchorifolium*; *M. coromandelianum* subsp. *coromandelianum*; *M. guatemalense*.

EL SALVADOR: *M. americanum* var. *americanum*; *M. corchorifolium*; *M. coromandelianum* subsp. *coromandelianum*.

HONDURAS: *M. americanum* var. *americanum*; *M. corchorifolium*; *M. coromandelianum* subsp. *coromandelianum*; *M. guatemalense*.

NICARAGUA: *M. americanum* var. *americanum*; *M. corchorifolium*; *M. coromandelianum* subsp. *coromandelianum*; *M. guatemalense*.

COSTA RICA: *M. americanum* var. *americanum*; *M. coromandelianum* subsp. *coromandelianum*.

PANAMA: *M. americanum* var. *americanum*; *M. coromandelianum* subsp. *coromandelianum*.

CARIBBEAN ISLANDS: *M. americanum* var. *americanum*; *M. corchorifolium*; *M. coromandelianum* subsp. *coromandelianum*.

COLOMBIA: *M. americanum* var. *americanum*; *M. coromandelianum* subsp. *coromandelianum*.

VENEZUELA: *M. americanum* var. *americanum*; *M. coromandelianum* subsp. *coromandelianum*; *M. coromandelianum* subsp. *fryxellii*; *M. tomentosum*.

GUYANA: *M. coromandelianum* subsp. *coromandelianum*.

ECUADOR (incl. GALÁPAGOS): *M. americanum* var. *americanum*; *M. coromandelianum* subsp. *capitato-spicatum*; *M. coromandelianum* subsp. *coromandelianum*; *M. tomentosum* subsp. *tomentosum*; *M. tomentosum* subsp. *pautense**.

PERU: *M. americanum* var. *americanum*; *M. coromandelianum* subsp. *coromandelianum*; *M. scoparioides**; *M. tomentosum* subsp. *tomentosum*.

CHILE: *M. coromandelianum* subsp. *coromandelianum*.

BRAZIL: *M. americanum* var. *americanum*; *M. coromandelianum* subsp. *coromandelianum*; *M. coromandelianum* subsp. *fryxellii**; *M. tomentosum* subsp. *tomentosum*.

BOLIVIA: *M. amblyphyllum*; *M. americanum* var. *americanum*; *M. coromandelianum* subsp. *capitato-spicatum*; *M. coromandelianum* subsp. *coromandelianum*; *M. grandiflorum**; *M. interruptum*; *M. spiciflorum*.

PARAGUAY: *M. amblyphyllum*; *M. americanum* var. *americanum*; *M. coromandelianum* subsp. *capitato-spicatum* (possibly occurs);

M. coromandelianum subsp. *coromandelianum*; *M. tomentosum* (possibly occurs).

ARGENTINA: *M. amblyphyllum*; *M. americanum* var. *americanum*; *M. coromandelianum* subsp. *capitato-spicatum*; *M. coromandelianum* subsp. *coromandelianum*; *M. interruptum*; *M. spiciflorum*.

URUGUAY: *M. coromandelianum* subsp. *coromandelianum*.

OLD WORLD

AFRICA: *M. americanum* var. *americanum* (Cape Verde Islands); *M. corchorifolium* (Ghana); *M. coromandelianum* subsp. *coromandelianum* (Ghana, Kenya, Madagascar, Madeira, South Africa).

ASIA: *M. americanum* var. *americanum* (India, Burma, China (Fukien), Indonesian Archipelago (Timor)); *M. coromandelianum* subsp. *coromandelianum* (Oman, India, Sri Lanka, China, Taiwan, Viet Nam, Indonesia).

AUSTRALIA: *M. americanum* var. *americanum*; *M. americanum* var. *stellatum**; *M. chillagoense**; *M. coromandelianum* subsp. *coromandelianum*.

PACIFICA: *M. coromandelianum* subsp. *coromandelianum* (widespread).

APPENDIX II.

Data matrices used in the construction of the cladogram

I. OTU code

1 *Malvastrum hispidum* 2 *Malvastrum spiciflorum* 3 *Malvastrum interruptum* 4a *Malvastrum americanum* var. *americanum* 4b *Malvastrum americanum* var. *stellatum* 5 *Malvastrum chillagoense* 6a *Malvastrum tomentosum* subsp. *tomentosum* 6b *Malvastrum tomentosum* subsp. *pautense* 7 *Malvastrum scoparioides* 8 *Malvastrum guatemalense* 9a *Malvastrum bicuspidatum* subsp. *bicuspidatum* 9b *Malvastrum bicuspidatum* subsp. *campanulatum* 9c *Malvastrum bicuspidatum* subsp. *oaxacanthum* 9d *Malvastrum bicuspidatum* subsp. *tumidum* var. *tumidum* 9e *Malvastrum bicuspidatum* subsp. *tumidum* var. *glabrum* 10 *Malvastrum grandiflorum* 11 *Malvastrum amblyphyllum* 12 *Malvastrum aurantiacum* 13a *Malvastrum coromandelianum* subsp. *coromandelianum*

- 13b *Malvastrum coromandelianum* subsp. *capitato-spicatum*
13c *Malvastrum coromandelianum* subsp. *fryxellii* 14 *Malvastrum corchorifolium*

II. Character code

- 1 Plants perennial (0) annual or perennial (0.5) or annual (1).
- 2 Plant height at maturity ≥ 1 m (0) or < 1 m (1)
- 3 Stem-hairs stellate with 5–8 rays (0) lepidote (0.4) stellate with 2–5 rays (0.5) with 4 rays (0.6) mixed simple and stellate (1)
- 4 Stipules lanceolate (0) or narrowly lanceolate or subulate (1)
- 5 Petioles on midstem leaves > 40 mm long (0) 20–40 mm (0.5) < 20 mm (1)
- 6 Leaf-blades of midstem leaves 1.5–3.9 times longer than the petiole (0) or 4 or more times longer (1)
- 7 Leaf-blades of midstem leaves ovate (0) ovate-elliptic (0.5) or ovate-lanceolate to lanceolate (1)
- 8 Leaf-blades of midstem leaves usually lobed (0) occasionally lobed (0.5) or ovate-lanceolate to lanceolate (1)
- 9 Leaf-blade base cordate to truncate and broad (0) intermediate (0.5) or cuneate and narrow (1)
- 10 Leaf-blade apex acute or acuminate (0) or rounded (1)
- 11 Leaf-blade margin at midstem with 1.5–5 teeth/cm (0) or with > 5 teeth/cm (1)
- 12 Leaf-blade of midstem leaves ≥ 8 cm long (0) or < 8 cm long (1)
- 13 Leaf-blade of midstem leaves ≥ 6 cm wide (0) or < 6 cm wide (1)
- 14 Leaf-blade adaxial surface hairs stellate with 5–8 rays (0) lepidote (0.4) stellate with 2–5 rays (0.5) with 4 rays (0.6) or simple only or mixed with a few stellate hairs with 2–4 rays (1)
- 15 Leaf-blade abaxial surface hairs stellate with 8–12 rays (0) mostly lepidote (0.4) stellate with 2–5 rays (0.5) with 4 rays (0.6) or simple only or mixed with a few stellate hairs with 2–4 rays (1)
- 16 Inflorescence at maturity of solitary axillary flowers (0) of basally leafy simple terminal racemes (0.5) of leafless axillary glomerate spicate racemes (0.6) or a terminal spike (1)

- 17 Bifid floral bracts absent (0) or present (1)
- 18 Pedicel at anthesis > 1 mm long (0) 0.5–1 mm long (0.5) or < 0.5 mm (1)
- 19 Bracteole width ≥ 1.0 mm (0) or < 1.0 mm (1)
- 20 Bracteole lanceolate to narrowly lanceolate (0) linear to filiform (0.5) or ovate (1)
- 21 Bracteole free from calyx (0) united < 2.0 mm to calyx (0.5) or united > 2 mm (1)
- 22 Sepals joined 0.3 times their length or less (0) or united 0.5 times or more (1)
- 23 Calyx-length in fruit 5–8 mm (0) or 9–20 mm (1)
- 24 Calyx-lobes in fruit erect (0) incurved (0.5) slightly spreading (0.8) or rotate (1)
- 25 Calyx-lobes triangular (0) intermediate (0.5) or deltate (1)
- 26 Calyx-lobes in fruit < 4 mm wide (0) or ≥ 4 mm (1)
- 27 Calyx abaxial surface-hairs stellate with 5–10 rays (0) lepidote (0.4) a mixture of simple and stellate with 2–8 rays usually different sizes (0.5) 2–4-rayed hairs mixed (1)
- 28 Petal-length 8–10 mm (0) more than 10 mm (0.5) or < 8 mm (1)
- 29 Petal-width ≥ 5 mm (0) < 5 mm (1)
- 30 Petals conspicuously cleft or emarginate (0) intermediate (0.5) or not conspicuously cleft or emarginate (1)
- 31 Petals yellow-orange (0) or paler (1)
- 32 Petals rotate (0) wide-campanulate (0.5) or campanulate (1)
- 33 Petals exceeding calyx by 3–8 mm (0) or by 0.0–2 mm (1)
- 34 Stamens 16–50 in number (0) 51–111 (0.5) or 5–15 (1)
- 35 Filament-tube 2.0–7.0 mm tall (0) or < 2.0 mm (1)
- 36 Filament-tube pubescent (0) or glabrous (1)
- 37 Pollen equatorial diameter $\leq 60 \mu\text{m}$ (0) 61–90 μm (0.5) or $> 90 \mu\text{m}$ (1)
- 38 Pollen aperture number 4–7 (0) 8–20 (0.5) or > 20 (1)
- 39 Pollen-spine length 2–4 μm (0) or 5–10 μm (1)
- 40 Carpel number usually 9–12 (0) < 9 (0.5) > 12 (1)
- 41 Stigmas discoid to hemispherical (0) globose or subglobose (0.5) or unexpanded (1)
- 42 Stigmas exceeding anthers by 1.0–3.0 mm (0) or by 0.0–0.5 mm (1)
- 43 Styles not recurved at wilt (0) recurved at wilt (1)

- 44 Mericarp height including ornamentation 0.9–2.0 mm (0) or 2.5–6 mm (1)
- 45 Mericarp length including ornamentation 1.0–3 mm (0) or > 3 mm (1)
- 46 Proximal cusp absent (0) mucro only (0.5) present (1)
- 47 Proximal cusp length 0.0–0.5 mm (0) 0.5–1.0 mm (0.5) or 1–2.5 mm (1)
- 48 Distal cusps absent (0) or both present (1)
- 49 Distal cusps length 0 mm (0) 1–2 mm (0.5) or 0.1–1 mm (1)
- 50 Lateral faces smooth (0) slightly ribbed (0.5) or strongly ribbed (1)
- 51 Pericarpial lateral faces thin (0) intermediate or leathery (0.5) or firm and ligneous (1)
- 52 Distal margins not prolonged into a thin wing (0) slightly prolonged or rimmed (0.5) definitely prolonged (1)
- 53 Apical-distal-basal surface with conspicuous medial line (0) with inconspicuous line (0.5) or line absent (1)
- 54 Lateral faces at apical and distal margins glabrous (0) sparsely pubescent (0.5) or pubescent (1)
- 55 Vestiture of apical surface of stellate hairs (0) of asymmetrical or bilateral stellate hairs (0.3) of stellate and simple hairs mixed (0.5) of simple hairs only (0.6) or lacking (1)
- 56 Mericarp dehiscent (0) incompletely basally dehiscent (0.5) or indehiscent (1)
- 57 Endoglossum present (0) or absent (1)
- 58 Seed height 1.0–1.4 mm (0) or 1.5–3 mm (1)
- 59 Seed without apical-distal sulcus (0) with an inconspicuous sulcus (0.5) with sulcus (1)
- 60 Fruit-diameter including ornamentation 3.0–5 mm (0) 6–8 mm (0.5) or 9–11 mm (1)

RAW DATA MATRIX																				
Char.:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
OTU																				
1	1.0	1	0.5	1	1.0	0	1.0	1.0	1.0	0	0	1	1	0.5	0.5	0.0	0	0.0	1	0.5
2	0.0	0	0.0	1	0.5	0	0.0	0.5	0.0	0	0	1	1	0.5	0.0	0.6	0	0.0	1	0.5
3	0.0	0	0.6	1	0.5	0	0.0	1.0	0.0	0	0	0	1	0.5	0.0	0.6	1	0.0	1	0.5
4a	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	1.0	1	1.0	0	0.0
4b	0.0	0	0.0	0	1.0	0	1.0	0.5	0.0	0	0	1	1	0.0	0.0	1.0	1	1.0	0	0.0
5	0.0	1	0.0	1	1.0	0	0.0	1.0	0.0	0	0	1	1	0.0	0.0	0.5	1	0.0	1	0.5
6a	0.0	0	0.0	1	0.5	0	0.0	0.5	0.0	0	0	1	1	0.0	0.0	0.6	0	0.5	1	0.5
6b	0.0	0	0.0	1	0.5	0	0.0	0.5	0.0	0	0	1	1	0.0	0.0	0.6	0	0.5	1	0.5
7	0.0	0	0.0	1	0.0	0	0.0	0.5	0.0	0	0	0	0	0.0	0.0	0.5	1	0.5	1	0.5
8	0.0	0	1.0	1	0.0	0	0.5	1.0	0.5	0	0	1	1	1.0	0.0	0.5	1	0.0	0	0.0
9a	0.0	0	0.5	1	1.0	0	1.0	1.0	0.0	0	0	1	1	0.5	0.5	0.5	1	0.5	1	0.0
9b	0.0	0	0.0	1	1.0	1	1.0	1.0	0.0	0	0	1	1	0.0	0.0	0.5	1	0.5	0	0.0
9c	0.0	0	0.0	1	1.0	1	1.0	1.0	0.0	0	0	1	1	1.0	0.0	0.5	1	0.0	1	0.0
9d	0.0	0	0.0	1	0.5	0	0.5	1.0	0.5	0	0	1	1	1.0	1.0	0.5	1	0.0	0	0.0
9e	0.0	0	0.0	1	0.5	1	1.0	1.0	0.5	0	0	1	1	1.0	1.0	0.5	1	0.0	0	0.0
10	0.0	0	0.0	1	0.0	0	0.0	0.5	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0	0.0
11	0.0	0	0.0	1	0.5	0	0.0	1.0	0.0	1	0	1	0	0.0	0.0	0.0	0	0.0	0	0.0
12	0.0	0	0.4	0	0.5	0	0.0	1.0	0.0	1	0	1	1	0.4	0.4	0.0	0	0.0	0	1.0
13a	0.5	1	0.6	0	1.0	0	1.0	0.5	0.5	0	0	1	1	1.0	1.0	0.0	0	0.0	0	0.0
13b	0.5	0	0.6	0	0.5	0	0.0	0.5	0.0	0	0	0	1	0.6	0.6	0.6	0	0.0	1	0.0
13c	0.5	0	1.0	0	1.0	0	0.0	1.0	0.0	0	1	1	1	1.0	1.0	0.5	1	0.5	1	0.0
14	0.5	0	0.6	0	0.5	0	0.0	1.0	0.0	0	0	1	1	0.6	0.5	1.0	1	0.5	1	0.0

RAW DATA MATRIX																				1982]
Char.:	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
OTU																				Hill — <i>Malvastrum</i> III
1	0.5	1	1	0.5	1.0	1	0.5	1.0	1	0.5	1	1.0	1	1.0	1	1	0.5	0.5	0	0.5
2	0.0	0	0	0.0	0.0	0	0.0	1.0	1	1.0	1	1.0	1	1.0	1	0	0.0	0.0	0	0.5
3	0.0	1	0	0.5	0.0	1	0.5	1.0	0	0.5	1	0.0	0	0.0	1	0	0.5	0.5	1	0.0
4a	0.5	0	1	0.5	0.5	1	0.5	0.0	0	0.0	0	0.0	0	0.0	0	0	0.0	0.5	0	1.0
4b	0.5	0	1	0.5	0.5	0	0.5	1.0	1	0.0	0	0.0	1	0.0	0	0	0.0	0.5	0	0.0
5	0.0	0	0	0.0	0.0	0	0.0	1.0	1	0.0	1	1.0	1	0.0	0	0	0.0	0.0	0	0.5
6a	0.0	0	0	1.0	0.5	1	0.0	1.0	0	0.0	0	0.0	0	0.0	0	0	0.0	0.5	0	0.0
6b	0.0	1	0	0.5	1.0	1	0.0	1.0	0	0.0	0	0.5	0	0.0	0	0	0.5	0.5	1	0.0
7	0.0	1	1	0.5	0.0	1	0.0	0.5	0	0.0	0	0.5	0	0.0	0	0	0.5	0.5	1	0.0
8	0.5	0	1	0.8	0.0	0	0.5	0.0	0	0.0	0	0.0	0	0.0	0	0	0.5	0.0	0	0.0
9a	0.5	1	1	1.0	0.5	1	0.5	0.0	0	0.0	0	0.0	0	0.0	0	0	0.0	0.0	0	0.0
9b	0.5	1	1	0.8	0.5	1	0.5	0.5	0	0.0	0	0.0	0	0.5	0	0	0.0	0.0	0	0.0
9c	0.5	0	1	0.8	0.0	1	0.5	0.5	0	0.0	0	0.0	0	0.0	0	0	0.5	0.0	0	0.0
9d	0.5	0	1	0.8	0.0	1	0.5	0.0	0	0.0	0	0.0	0	0.0	0	0	0.5	0.0	0	0.0
9e	0.5	0	1	0.8	0.0	0	0.5	0.0	0	0.0	0	0.5	0	0.0	0	0	0.5	0.0	0	0.0
10	0.5	0	1	0.0	0.0	1	0.5	0.5	0	0.5	0	0.5	0	0.5	0	0	1.0	1.0	1	1.0
11	0.5	0	1	0.0	1.0	1	0.0	0.0	0	0.0	1	1.0	1	0.0	0	0	0.5	1.0	1	1.0
12	1.0	1	1	1.0	1.0	1	0.4	0.5	0	0.0	0	0.0	0	0.0	0	1	1.0	0.5	1	1.0
13a	0.5	1	1	1.0	1.0	1	1.0	0.0	0	0.0	0	0.0	0	0.0	0	1	0.5	1.0	1	0.0
13b	0.5	1	0	0.5	1.0	1	1.0	0.0	0	0.0	1	0.0	0	0.0	1	1	0.5	0.5	1	0.0
13c	0.5	1	0	0.5	1.0	1	1.0	1.0	1	0.0	0	0.5	1	0.0	1	1	0.5	0.5	1	0.0
14	0.5	0	1	0.5	1.0	1	0.5	1.0	1	0.0	0	0.5	1	0.0	0	0	0.5	1.0	1	0.0

RAW DATA MATRIX																					
Char.:																					Total Divergence Value (Σ character values)
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
OTU																					
1	0.5	1	1	1	1	0.0	0.0	0	0.0	0.0	0.5	0.0	0.0	1.0	0.6	0.0	1	1	0.0	0.5	36.6
2	0.0	1	1	0	0	0.5	0.0	0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	1.0	1	0	0.0	0.0	20.6
3	0.0	0	1	0	0	0.5	0.0	0	0.0	0.0	0.0	0.0	1.0	0.5	0.3	1.0	1	1	0.0	0.0	22.5
4a	0.5	0	1	0	0	0.5	0.0	0	0.0	0.5	1.0	0.0	0.5	0.5	0.6	0.5	0	1	0.0	0.5	15.6
4b	0.0	1	0	0	0	0.5	0.0	0	0.0	0.5	1.0	0.0	0.5	0.5	0.5	1.0	0	0	0.0	0.0	19.5
5	1.0	1	1	0	0	0.0	0.0	0	0.0	1.0	1.0	0.0	0.0	0.5	0.6	1.0	1	0	0.0	0.0	22.6
6a	0.0	0	1	1	1	1.0	0.0	1	0.5	1.0	1.0	0.0	0.0	1.0	0.0	1.0	0	1	1.0	0.5	22.6
6b	0.5	0	1	1	0	1.0	0.0	1	1.0	0.5	1.0	0.0	0.5	1.0	0.3	1.0	0	1	0.0	0.5	24.9
7	0.0	0	0	1	1	1.0	0.0	1	1.0	0.5	1.0	0.5	0.0	0.5	0.5	1.0	0	1	0.0	0.5	22.0
8	0.0	0	1	0	0	0.0	0.0	1	1.0	0.5	1.0	0.0	0.5	1.0	0.5	1.0	1	1	1.0	0.0	22.3
9a	0.5	0	1	0	1	0.0	0.0	1	0.5	1.0	1.0	0.0	0.5	0.5	0.5	1.0	1	1	1.0	0.5	28.0
9b	0.0	1	1	0	1	0.0	0.0	1	1.0	0.5	1.0	0.0	0.5	0.5	0.5	1.0	1	1	0.5	0.5	27.3
9c	0.5	0	1	0	0	0.0	0.0	1	1.0	0.5	0.5	0.5	0.0	0.0	0.0	1.0	0	1	0.0	0.5	22.8
9d	0.0	0	1	0	0	0.0	0.0	1	1.0	0.0	0.5	0.0	0.0	0.0	0.5	1.0	1	1	0.5	0.5	21.3
9e	0.0	0	1	0	0	0.0	0.0	1	1.0	0.0	0.5	0.0	0.0	0.0	1.0	1.0	1	1	0.5	0.0	22.3
10	0.5	0	0	1	1	1.0	0.5	1	0.5	1.0	1.0	1.0	0.0	0.0	0.6	1.0	1	1	0.0	0.5	23.1
11	0.5	1	0	1	1	1.0	0.5	1	1.0	1.0	1.0	1.0	0.0	0.0	0.6	1.0	1	1	0.0	1.0	29.1
12	0.5	0	1	1	1	1.0	1.0	1	0.5	0.0	1.0	0.0	0.5	0.5	0.5	1.0	1	1	0.0	1.0	31.6
13a	0.5	0	1	1	1	1.0	1.0	1	1.0	1.0	1.0	0.5	0.5	0.5	0.5	1.0	1	1	0.0	0.5	34.1
13b	0.5	1	1	1	1	1.0	1.0	1	1.0	1.0	1.0	0.5	0.5	0.5	0.5	1.0	1	1	0.0	0.5	31.9
13c	0.5	0	1	0	0	1.0	0.5	1	1.0	0.5	1.0	0.5	0.5	0.5	0.6	1.0	1	0	0.0	0.0	34.6
14	0.5	1	1	1	0	1.0	0.0	1	1.0	1.0	1.0	0.0	0.5	1.0	0.5	0.5	0	1	0.0	0.5	32.3

DISTANCE MATRIX																							
OTU	1	2	3	4a	4b	5	6a	6b	7	8	9a	9b	9c	9d	9e	10	11	12	13a	13b	13c	14	
1	0	31	31	40	38	30	38	34	41	40	32	38	35	36	38	39	35	37	34	34	36	32	
2		0	23	36	26	16	28	29	38	33	38	36	34	34	34	39	35	43	47	38	37	38	
3			0	29	29	30	28	23	27	29	30	34	30	27	30	35	38	33	37	27	31	33	
4a				0	15	32	28	27	27	26	25	25	26	28	32	27	32	32	34	33	34	27	
4b					0	24	27	28	30	23	25	22	26	28	28	37	37	35	33	37	28	26	
5						0	28	31	33	29	30	30	29	31	25	37	30	41	42	40	33	34	
6a							0	13	20	29	22	26	27	28	33	27	30	29	32	29	36	28	
6b								0	15	29	28	27	29	30	32	29	28	27	28	23	25	20	
7									0	29	28	25	27	29	32	22	28	30	30	27	30	28	
8										0	19	18	16	9	11	33	33	33	28	35	31	29	
9a											0	13	20	20	24	34	34	27	24	31	30	27	
9b												0	16	18	19	31	33	31	29	33	33	30	
9c													0	13	14	29	31	35	29	34	29	28	
9d														0	6	31	30	32	27	34	34	29	
9e															0	33	32	36	31	39	33	32	
10																0	16	27	29	33	39	33	
11																	0	26	28	28	35	28	
12																		0	21	24	32	31	
13a																			0	15	25	26	
13b																				0	23	23	
13c																						0	23
14																							0

APPENDIX III.

A *MALVASTRUM* NOMENCLATOR
(EXCLUDED or UNCERTAIN SPECIES)

Summary of names published in *Malvastrum* and their present taxonomic placement. An asterisk (*) precedes the currently accepted name. To avoid repetition cross references are made to names treated previously in the text. New names published after 1979 are excluded from this list but are included in the text.

- Malvastrum abbottii* Eastwood, Leaflet. W. Bot. **1**: 215. 1936. TYPE: California: Monterey Co., Salinas River, *Abbott s.n.* (Holotype: CAS no. 52708; isotypes: CAS, GH). **Malacothamnus abbottii* (Eastw.) Kearney, Leaflet. W. Bot. **6**: 129. 1951.
- M. aboriginum* Robinson in A. Gray, Syn. Fl. N. Am. **1**, 1: 311. 1897. TYPE: California: Monterey Co., Indian Valley near the Salinas River, *Curran s.n.* (Holotype: CAS no. 741). **Malacothamnus aboriginus* (Robins.) Greene, Leaflet. Bot. Observ. Crit. **1**: 208. 1906.
- M. acaule* (Dombey ex Cavanilles) A. Gray. U. St. Expl. Exped. **1**: 150, in *adn.* 1854. Basionym: *Malva acaulis* Dombey ex Cavanilles, Diss. **2**: 82, t. 35, f. 2. 1786. TYPE: Peru: Dep. Lima, Cordillera, *Dombey 677* (Holotype: P; isotype: G, K, MA). **Acaulimalva acaulis* (Dombey ex Cav.) Krap. Darwiniana **19**: 15. 1974.
- M. acaule* var. *granatense* (Weddell) E. G. Baker, J. Bot. **29**: 171 (new comb. not indicated). 1891. Basionym: *Malva acaulis* var. *β granatensis* Weddell, Chlor. And. **2**: 275. 1861. TYPE: Venezuela: Prov. Mérida, Páramo de Machuchies, alt. 3900 m, *Linden 1425* (Lectotype: P; isotype: G! OXF!) **Acaulimalva purdiei* (A. Gray) Krap., Darwiniana **19**: 26. 1974.
- M. albens* Harvey in Harvey & Sonder, Fl. Cap. **1**: 163. 1860. TYPE: South Africa: Cape Province, Malmesbury Distr., Riebeckskasteel, hills under 1000 ft., *Drege s.n.* (Lectotype: K; isotypes: BM, G, K, L, MO, P). **Anisodontea biflora* (Desrousseaux) Bates, Gentes Herb. **10**: 340. 1969.
- M. albertii* (Philippi) K. Reiche, Anales Univ. Chile **91**: 379. 1895 ("alberti"). Basionym: **Tarasa albertii* Philippi, Anales Univ. Chile **82**: 321. 1893 ("Tarassa Alberti"). TYPE: Argentina: Prov.

Mendoza (Colchagua), Portezuelo del Tinguiririca, Valle de Sasneado, *Albert s.n.* (Holotype: SGO no. 52169).

M. alexandri E.G. Baker, J. Bot. **29**: 166. 1891. TYPE: South Africa: Cape Province, George District, *Alexander s.n.* (Holotype: BM, fragment at κ). **Anisodonteia alexandri* (E. G. Baker) Bates, Gentes Herb. **10**: 336. 1969.

M. alexandri sensu Hutchinson, Bot. in S. Afr. 79, 80, f. p. 81. 1946, non E.G. Baker, 1891. **Anisodonteia setosa* (Harvey) Bates, Gentes Herb. **10**: 344. 1969.

M. alismatifolium K. Schumann & Hieronymus, Bot. Jahrb. Syst. **21**: 318. 1896. TYPE: Peru: Dep. Cajamarca. Puna desert near Centimal and Comulca between Pacasmayo and Moyobamba, *Stübel 39* (Holotype: B (lost) — photo Field museum ser. no. 9306 at F!, fragment of holotype at κ! (mericarps)). **Acaulimalva alismatifolia* (K. Schum. & Hieron.) Krap., Darwiniana **19**: 16. 1974.

**M. amblyphyllum* R. E. Fries. See text.

**M. americanum* (Linnaeus) Torrey in Emory. See text.

M. angustifolium (Cavanilles) Hemsley, Biol. Centr. Am. Bot. **1**: 99. 1879. Basionym: *Malva angustifolia* Cavanilles, Diss. **2**: 64, t. 20, f. 3. 1786. TYPE: Mexico. Cultivated at the Royal Botanic Garden, Madrid, seeds from Palau (Holotype: MA; isotype: MA). **Sphaeralcea angustifolia* (Cav.) G. Don, Hist. Dichl. Pl. **1**: 465. 1831.

M. angustifolium (Harvey) Stapf ex Fourcade, Bot. Surv. S. Afr. Mem. **20**: 56. 1941, non Hemsley, 1879. Basionym: *Malvastrum virgatum* (Murr.) Gray & Harvey in Harvey & Sonder var. *β angustifolium* Harvey in Harvey & Sonder, Fl. Cap. **1**: 162. 1860 ("angustifolia"). TYPE: South Africa: *Drège 7320* (Lectotype: κ; isotypes: G!, L, MO, P, S). **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.

M. angustum A. Gray. **Malvastrum hispidum* (Pursh) Hochreutiner. See text.

M. anthemidifolium (Remy) A. Gray, Bot. U. St. Expl. Exped. **1**: 152, in adn. 1854. Basionym: *Sida anthemidifolia* J. Remy, Ann. Sci. Nat. Bot. ser. 3, **6**: 356. 1846. TYPE: Bolivia: Alto de Tola, road from Potosí to Oruro, *D'Orbigny 1357* (Lectotype: P). **Nototriche anthemidifolia* (Remy) A. W. Hill, Bot. Jahrb. Syst. **37**: 578. 1906.

- M. antofagastanum* E. G. Baker, J. Bot. **29**: 167. 1891. First published as a nomen nudum in J. Bot. **28**: 368. 1890, based upon the label name *Malva antofagastana* Philippi, later published by Philippi in Anales Mus. Nac. Chile Bot. **2**: 7. 1891. TYPE: Argentina: Prov. Catamarca. Antofagasta de la Sierra, alt. 3570 m, *Philippi s.n.* (Holotype: K; isotypes: B (lost)—photo Field Mus. ser. no. 9307 at F!, SGO nos. 41034 and 51991). **Tarasa antofagastana* (Phil.) Krap., Bol. Soc. Argent. Bot. **5**: 130. 1954.
- M. arcuatum* (Greene) Robinson in A. Gray, Syn. Fl. N. Am. **1**, **1**: 311. 1897. Basionym: *Malveopsis arcuata* Greene, Man. Bot. San Franc. Bay: 66. 1894. TYPE: California: San Mateo Co., eastern slopes of the coast range back of Belmont, *Greene s.n.* (Holotype: UC no. 191563). **Malacothamnus arcuatus* (Greene) Greene, Leaflet Bot. Observ. Crit. **1**: 208. 1906.
- M. arequipense* I. M. Johnston, Contr. Gray Herb. n.s. **70**: 74. 1924. TYPE: Peru: Dep. Arequipa. Hillside on the south slope of Chachani Mountain near Arequipa, alt. 2100 m, *Hinkley & Hinkley 43a* (Holotype: GH). **Urocarpidium albiflorum* Ulbrich, Bot. Jahrb. Beibl. **117**: 64. 1916.
- M. aretioides* A. Gray, Bot. U. St. Expl. Exped. **1**: 153. 1854. TYPE: Peru: Dep. Lima. Cordilleras at Casa Cancha, *Pickering s.n.* (Holotype: US!) **Nototriche aretioides* (A. Gray) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. asperrimum* (Jacquin) Gray & Harvey in Harvey & Sonder, Fl. Cap. **1**: 161. 1860. Basionym: *Malva asperrima* Jacquin, Hort. Schoenbr. **2**: 7, t. 139. 1797. TYPE: t. 139, chosen by Bates (1969) is the lectotype. **Anisodonteia bryoniifolia* (L.) Bates, Gentes Herb. **10**: 353. 1969.
- M. asperrimum* var. β *stellatum* (Thunberg) Harvey in Harvey & Sonder, Fl. Cap. **1**: 161. 1860. Basionym: *Malva stellata* Thunberg, Prodr. Pl. Cap.: 119. 1800. TYPE: South Africa: *Thunberg s.n.* (Holotype: UPS — Microfiche number 16012). **Anisodonteia bryoniifolia* (L.) Bates, Gentes Herb. **10**: 353. 1969.
- **M. aurantiacum* (Scheele) Walpers. See text.
- M. auricomum* Philippi, Anales Mus. Nac. Chile Bot. **2**: 8. 1891. Also Philippi ex E. G. Baker, J. Bot. **29**: 365. 1891. TYPE: Chile: Atacama Desert, between Machuca and Copacoya, alt. 1130 m, *Philippi 1819* (Holotype: SGO no. 41051; isotype: SGO no. 51993,

- κ). **Nototriche auricoma* (Philippi) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. bakerianum* A. W. Hill, J. Linn. Soc. Bot. **39**: 228. 1909. TYPE: Peru: Dep. Puno, Tirapata, between Pucara and Ayauri, alt. 12,730 ft., Hill 74 (Lectotype: κ!). **Acaulimalva engleriana* (Ulbr.) Krap., Darwiniana **19**: 19. 1974.
- M. bakerianum* f. *hirsutissimum* R. E. Fries, Kongl. Svenska Vetenskapsakad. Handl. **24**: 12. 1947. TYPE: Peru: Dep. Puno, Chuquibambilla, Pennell 13417, pro parte, (Holotype: s!; isotypes: F!, κ!, PH!). **Acaulimalva engleriana* (Ulbr.) Krap., Darwiniana **19**: 19. 1974.
- M. bakerianum* var. *strigosum* A. W. Hill, Kew Bull.: 160. 1935. TYPE: Peru: Dep. Cuzco, high valley, Urcos, alt. 3600–4800 m., Stafford 325 (Lectotype: κ!; isotype: κ!, us) **Acaulimalva engleriana* (Ulbr.) Krap., Darwiniana **19**: 19. 1974.
- M. belloum* (Gay) E. G. Baker, J. Bot. **28**: 368. 1890. Combination often incorrectly attributed to Gray (1854). Basionym: *Malva belloa* Gay, Fl. Chil. **1**, 3: 304, t. 7. 1846. TYPE: Chile: Prov. Coquimbo. Hautenlauque near the ocean, río Huapo, Gay 801 (Holotype: P; isotypes: B (lost) — photo Field Mus. ser. no. 9308 — F!, F!, G!, K, P). **Sphaeralcea purpurata* (Lindley) Krap., Lilloa **17**: 218. 1949.
- M. betonicifolium* A. W. Hill, J. Linn. Soc. Bot. **39**: 221. 1909. (“*betonicaefolium*”). TYPE: Peru: Dep. Ayacucho, Andes of Huanta, alt. 3950–4260 m, Pearce s.n. (Holotype: κ). **Acaulimalva betonicifolia* (A. W. Hill) Krap., Darwiniana **19**: 16. 1974 (“*betonicaefolia*”). See also *M. purdiei* var. *huantense*.
- **M. bicuspidatum* (S. Watson) Rose. See text for additional information on this and new subspecific taxa.
- M. bolivianum* E. G. Baker, J. Bot. **29**: 168. 1891. TYPE: Bolivia: Prov. Tarija. Tarija, Pearce s.n. (Holotype: κ). **Tarasa heterophylla* (Griseb.) Krap., Bol. Soc. Argent. Bot. **5**: 124. 1954.
- M. borussicum* (Meyen) Weddell, Chlor. And. **2**: 278. 1861. Basionym: *Sida borussica* Meyen, Reise **2**: 31. 1834. TYPE: Peru: near Lake Titicaca, plateau, Meyen s.n. (Holotype: B (lost)). **Nototriche borussica* (Meyen) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. bryoniifolium* (Linnaeus) Gray & Harvey in Harvey & Sonder, Fl. Cap. **1**: 161. 1860. (“*bryonifolium*”). Basionym: *Malva bry-*

- oniifolia* Linnaeus, Sp. Pl. 2: 688. 1753 ("bryonifolia"). TYPE: in Linnaean Herbarium (Lectotype: LINN 870. 7—chosen by Bates (1969)). **Anisodonteia bryonifolia* (L.) Bates, Gentes Herb. 10: 353. 1969.
- M. buchtienii* Pax ex Lingelsheim, Pax & Winkler, Feddes Repert. Spec. Nov. Regni Veg. 7: 243. 1909. TYPE: Bolivia: Prov. La Paz. High plateau near Viacha, 30 km S of La Paz, alt. 3900 m, *Buchtien* 928 (Holotype: B (lost)—photo Field mus. ser. no. 9309; isotype: K!, NY!, US!). **Acaulimalva nubigena* (Walp.) Krap., Darwiniana 19: 22. 1974.
- M. bullatum* Ekman, Ark. Bot. 13: 6, t. 1, f. 1. 1914. TYPE: Brazil: Est. Paraná. High plateau, Calmão, *Dusén* 9331 (Holotype: s!; isotype: f!). **Monteiroa bullata* (Ekman) Krap., Bol. Soc. Argent. Bot. 3: 242. 1951.
- M. burchellii* E. G. Baker, J. Bot. 29: 165. 1891. TYPE: South Africa: Cape Province. Near the mouth of the Knysna River near Melkhout Kraal, *Burchell* 5386 (Holotype: K; isotypes: GH, L). **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. 10: 368. 1969.
- M. calycinum* (Cavanilles) Gray & Harvey in Harvey & Sonder, Fl. Cap. 1: 161. 1860. Basionym: *Malva calycina* Cavanilles, Diss. 2: 81, t. 22, f. 4. 1786. TYPE: South Africa. Cape Province. Cape of Good Hope, *Thunberg* s.n. (Lectotype: MA; isotype: UPS — microfiche no. 15967). **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. 10: 368. 1969.
- M. campanulatum* (Paxton) Nicholson, Dict. Gard. 2: 319. 1885. Basionym: *Malva campanulata* Paxton, Paxton's Mag. Bot. 9: 173, f. p. 172. 1843. TYPE: Described from specimens at Henderson's Nursery apparently unvouchered. A specimen at Kew (photo, Muñoz Pizarro neg. no. 1625 — srh!) grown there in 1855 is certainly this plant and may be from the same line. (Lectotype: the figure, p. 172, is chosen as lectotype). **Sphaeralcea purpurata* (Lindl.) Krap., Lilloa 17: 218. 1949.
- M. capense* (Linnaeus) Gray & Harvey in Harvey & Sonder, Fl. Cap. 1: 160, 1860, quoad basionym. Basionym: *Malva capensis* Linnaeus, Sp. Pl. 2: 688. 1753. TYPE: a cultivated specimen from the Clifford estate (Holotype: BM — Clifford Herbarium). **Anisodonteia capensis* (L.) Bates, Gentes Herb. 10: 327. 1969.
- M. capense* sensu Gray & Harvey in Harvey & Sonder, Fl. Cap. 1: 160. 1860, excl. basionym. **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. 10: 368. 1969.

- M. capense* var. β *balsamicum* (Jacquin) Harvey in Harvey & Sonder, Fl. Cap. **1**: 160. 1860. Basionym: *Malva balsamica* Jacquin, Misc. Austr. **2**: 321. 1781; Ic. Pl. Rar. **1**, 1: t. 140. 1781. TYPE: t. 140, chosen by Bates (1969), is the lectotype. **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.
- M. capense* var. *fragrans* (Jacquin) E. G. Baker, J. Bot. **29**: 164. 1891. Basionym: *Malva fragrans* Jacquin, Horti. Bot. Vindobon. **3**: 20, t. 33. 1776. TYPE: t. 33, chosen by Bates (1969), is the lectotype. **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.
- M. capense* var. α *glabrescens* Harvey in Harvey & Sonder, Fl. Cap. **1**: 160. 1860, quoad basionym. TYPE: As for *Malva capensis* L., see *M. capense* above and Bates (1969). **Anisodonteia capensis* (L.) Bates.
- M. capense* var. α *glabrescens* sensu Harvey in Harvey & Sonder, Fl. Cap. **1**: 160. 1860, excl. basionym. **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.
- M. capitatum* (Cavanilles) Grisebach, Abh. Königl. Ges. Wiss. Göttingen **19**: 90. 1874. Basionym: *Malva capitata* Cavanilles, Diss. **5**: 280, t. 137, f. 1. 1788. TYPE: Peru: Colonia Sacramento y Montevideo, Neé s.n. (Holotype: MA – photo no. 29769 at F!; isotype: c!, F!). **Tarasa capitata* (Cav.) Bates, Gentes Herb. **9**: 388. 1965.
- M. carpinifolium* A. Gray. **M. coromandelianum* (L.) Garcke. See text.
- M. casabambense* Stuckert, Anales Soc. Ci. Argent. **114**: 24. 1932. TYPE: Argentina: Prov. Córdoba, Casa Bamba, Stuckert 23518. (Neotype: CORD; isotype: BAA – photo srh!). Krapovickas (pers. comm.) has not been able to find the specimen dated 'XI, 1927' cited by Stuckert, but has discovered Stuckert 23518, collected in 1930–1931 at Casa Bamba and annotated with this name by Stuckert, in the Stuckert Herbarium (CORD) and in the Parodi Herbarium (BAA). The plant is **Melochia argentina* R. E. Fries, Meded. Rijk. Herb. Leid. **19**: 42. 1913.
- M. castelnauium* Weddell, Chlor. And. **2**: 283, t. 80, f. A, 1861 ("castelnaeanum"). TYPE: Peru: Dep. Cuzco, Cordilleras of Cuzco, de Castelnau s.n. (Lectotype: p). **Nototriche castelnauiana* (Wedd.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906 ("castelnaeana").

- M. catalinense* Eastwood, Leafl. W. Bot. **1**: 215. 1936. TYPE: California: Santa Catalina Island, *Eastwood 6442* (Holotype: CAS no. 52692). **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene subsp. *catalinensis* (Eastw.) R. F. Thorne, *Aliso* **6**: 55. 1967.
- M. catamarcense* I. M. Johnston, Contr. Gray Herb. n.s. **70**: 75. 1924. TYPE: Argentina: Prov. Catamarca. El Candado, Dep. Andalgalá, *Jørgensen 1388* (Holotype: GH! isotypes: MO!, US!). **Urocarpidium pentandrum* (K. Schum.) Krap., *Darwiniana* **10**: 632. 1954.
- M. cavanillesii* A. Gray, Bot. U. St. Expl. Exped. **1**: 156. 1854. Based upon: *Sida acaulis* Cavanilles, Ic. Pl. **5**: 13, t. 422, f. 2. 1799. TYPE: (Holotype: MA—photo srh!; isotype: MA). **Nototriche acaulis* (Cav.) Krap., Bol. Soc. Argent. Bot. **15**: 286. 1973.
- **M. chillagoense* K. Domin. See text.
- M. clandestinum* (Phil.) E. G. Baker, J. Bot. **29**: 363. 1891. Basionym: *Sida clandestina* Philippi, Flor. Atac.: **11**. 1860. TYPE: Chile: Atacama Desert, Valle Sandón, Lat. 25° 4' S, alt. 2,743 m, *Philippi s.n.* (Holotype: SGO No. 51994; isotypes: B (lost), SGO No. 41064). **Nototriche clandestina* (Phil.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. clementinum* Munz & I. M. Johnston, Bull. Torrey Bot. Club **51**: 296. 1924. TYPE: California: Los Angeles Co., San Clemente Island, canyon walls near Lemon Tank, *Munz 6684* (Holotype: POM no. 20491; isotypes: CAS, F!, GH!, NY, US!). **Malacothamnus clementinus* (Munz & I. M. Johnston) Kearney, Leafl. W. Bot. **6**: 127. 1951.
- M. coccineum* (Nuttall) A. Gray var. *coccineum*, Mem. Amer. Acad. Arts. n.s. **4**: 21, in adn. 1849. Basionym: *Malva coccinea* Nuttall, Fraser's Catalogue: 2. 1813. TYPE: "from the river Platte to the Rocky Mountains", *Nuttall s.n.* (Lectotype: PH!; isotypes: OXF!, PH!). **Sphaeralcea coccinea* (Nutt.) Rydberg var. *coccinea*, Bull. Torrey Bot. Club **40**: 58. 1913. See Southwestern Naturalist **23**: 657. 1978 for information on this species.
- M. coccineum* var. β *dissectum* (Nuttall in Torrey & Gray) A. Gray, Mem. Amer. Acad. Arts, n.s. **4**: 24. 1849. Basionym: *Sida dissecta* Nuttall in Torrey & Gray, Fl. N. Am. **1**: 235. 1838. TYPE: Plains of the Upper Platte River, *Nuttall s.n.* (Lectotype: BM; isotype: PH). **Sphaeralcea coccinea* (Nutt.) Rydb. var. *coccinea*, Bull. Torrey Bot. Club **40**: 58. 1913.

- M. coccineum* var. *elatum* E. G. Baker, J. Bot. **29**: 171. 1891. TYPE: Western Texas to El Paso, *Wright 41* (Lectotype: BM; isotypes: G!, GH!, MO, NY, OXF!, US!). **Sphaeralcea coccinea* (Nutt.) Rydb. var. *elata* (E. G. Baker) Kearney in Kearney & Peebles, J. Wash. Acad. Sci. **29**: 486. 1939.
- M. coccineum* var. *grossulariifolium* (Hook & Arn.) Torrey in Stansbury, Bot. Stansb. Exped.: 384. 1852. ("grossulariaefolium"). Basionym: *Sida grossulariifolia* Hooker & Arnott, Bot. Beechey Voy.: 326. 1838 ("grossulariaefolia"). TYPE: "Bamcock River, Snake Country", prob. Bannock River, Power Co., Idaho, collector not indicated (Holotype: K; isotype: Y). **Sphaeralcea grossulariifolia* (Hook & Arn.) Rydberg, Bull. Torrey Bot. Club **40**: 48. 1913 ("grossulariaefolia").
- M. cockerellii* A. Nelson, Bot. Gaz. (Crawfordsville) **34**: 24. 1902 ("cockerelli"). Based upon *Sida dissecta* Nutt. in Torr. & Gray, see *M. coccineum* var. *dissectum* above. **Sphaeralcea coccinea* (Nutt.) Rydb. var. *coccinea*.
- M. compactum* (Gay) A. Gray, Bot. U. St. Expl. Exped. **1**: 152, in *adn.* 1854. Basionym: *Sida compacta* Gay, Fl. Chil. **1**: 329. 1846, non St.-Hil & Naud, 1842. TYPE: Chile: Prov. Santiago, Cordillera of Santiago, alt. 3100 m, *Gay s.n.* (Lectotype: P (no. 894, prob. not Gay's number); isotypes: B!, F!, K, P). **Nototriche compacta* (Gay) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. condensatum* E. G. Baker, J. Bot. **29**: 363. 1891. TYPE: Peru: Dep. Puno, near Ayapata, *Lechler 1972* (Holotype: K; isotype: P). **Nototriche condensata* (E. G. Baker) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. confertum* Parish ex Jepson, Man. Fl. Pl. Calif.: 631. 1925, pro syn., nomen nudum. Based on *Parish 3786* June 25, 1890, San Bernardino Co., California (DS?). **Sidalcea hickmanii* Greene var. *parishii* Robinson in Gray, Syn. Fl. N. Amer. **1**, 1: 307. 1897.
- M. congestiflorum* I. M. Johnston, Contr. Gray Herb. **70**: 74. 1924. TYPE: Peru: Dep. Arequipa. South slope of Chachani Mountain near Arequipa, alt. 2745 m, *Hinkley & Hinkley 37* (Holotype: GH). **Tarasa congestiflora* (I. M. Johnst.) Krap., Bol. Soc. Argent. Bot. **5**: 138. 1954.
- M. conglomeratum* Grisebach ex K. Schumann in Martius, Fl. Bras. **12**, 3: 273, 1891, nomen nudum. Presumably an orthographic error for *Malvastrum glomeratum* (Hook & Arn.) Grisebach,

- Abh. Königl. Ges. Wiss. Göttingen **24**: 42. 1879. See *M. glomerata*. **Monteiroa glomerata* (Hook & Arn.) Krap.
- M. copelandii* Hieronymus, Bot. Jahrb. Syst. 20 Beibl. **49**: 43. 1895. TYPE: Peru: near Vincocaya, alt. 4376 m, *Copeland s.n.* (Holotype: B (lost)). **Nototriche orbignyana* (Weddell) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- **M. corchorifolium* (Desrousseaux) Britton ex Small. See text.
- M. cordifolium* N. Rojas-Acosta, Cat. Hist. Nat. Corrient.: 53. 1897. Krapovickas (pers. comm.) considers this a possible synonym of *Sida cordifolia* L. The publication is very scarce and has not been examined, and most of the species in the work have not been evaluated.
- **M. coromandelianum* (Linnaeus) Garcke subsp. *coromandelianum*. See text.
- M. coromandelianum* f. *breviaristata* Chodat & Hassler. **Malvastrum coromandelianum* (L.) Garcke subsp. *coromandelianum*. See text.
- M. coromandelianum* var. *congestum* R. E. Fries. **Malvastrum coromandelianum* (L.) Garcke subsp. *capitato-spicatum* (O. Kuntze) S. R. Hill. See text.
- M. corymbosum* Sandwith, Kew Bull.: 174. 1927. TYPE: Argentina: Prov. Neuquén. Rio Coyunco, *Comber 140* (Holotype: K). **Tarasa albertii* Philippi, Anales Univ. Chile **82**: 321. 1893.
- M. coulteri* S. Watson, Proc. Amer. Acad. Arts **11**: 125. 1876. TYPE: California: southeastern region (?), *Coulter 96* (Lectotype: GH—presence not verified). **Sphaeralcea coulteri* (S. Watson) A. Gray, Proc. Amer. Acad. Arts **22**: 291, in adn. 1887.
- M. crenatum* A. W. Hill, J. Linn. Soc. Bot. **39**: 227. 1909. TYPE: Peru: Dep. Lima. Hacienda Arapa, near Yauli, Lima-Oroya RR, alt. 4400 m, *Weberbauer 360* (Holotype: B (lost) — photo Field Mus. ser. no. 9311 at F! fragment of holotype K!; isotype: G). **Acaulimalva crenata* (A. W. Hill) Krap., Darwiniana **19**: 18. 1974.
- M. crozophoroides* Stapf ex Hutchinson, Botanist in S. Afr.: 436. 1946, sine descr. lat. Invalidly published. **Anisodonteia malvas-troides* (E. G. Baker) Bates, Gentes Herb. **10**: 314. 1969.
- M. davidsonii* Robinson in A. Gray, Syn. Fl. N. Am. **1**, 1: 312. 1897. TYPE: California: Los Angeles Co., San Fernando Valley, *Davidson s.n.* (Lectotype: GH; isotype: ND, US!). **Malacotham-*

- nus davidsonii* (Robinson) Greene, Leafl. Bot. Observ. Crit. **1**: 208. 1906.
- M. decipiens* (St.-Hil. & Naud.) K. Schumann in Martius, Fl. Bras. **12**, 3: 275. 1891. Basionym: *Sida decipiens* Saint-Hilaire & Naudin, Ann. Sci. Nat. Bot. **2**: 54. 1842. TYPE: Brazil: Est. Rio Grande do Sul, *St.-Hilaire s.n.* (Holotype: p). **Sphaeralcea decipiens* (St.-Hil. & Naud.) Krap., Lilloa **17**: 216. 1949.
- M. deflexum* (Turczaninow) Stapf ex Fourcade, Bot. Surv. S. Afr. Mem. **20**: 56. 1941. Basionym: *Malva deflexa* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou **31**: 186. 1858. TYPE: South Africa: Karro desert near the Gauritzrivier towards Graafreynet, *Ecklon & Zeyher 284* (Holotype: LE; isotypes: c, G!, K, L, MO, NBG, OXF!, P, S). **Anisodonteia triloba* (Thunb.) Bates, Gentes Herb. **10**: 363. 1969.
- M. densiflorum* S. Watson, Proc. Amer. Acad. Arts **17**: 368. 1882. TYPE: California: San Diego Co. near Agua Caliente in the San Jacinto Mountains, *Parish & Parish 738* (Lectotype: GH; isotypes: PH!, VT!). **Malacothamnus densiflorus* (S. Watson) Greene, Leafl. Bot. Observ. Crit. **1**: 208. 1906.
- M. densiflorum* var. *typicum* F. Estes, Bull. S. Calif. Acad. Sci. **24**: 85, 1925. The typical variety, see *M. densiflorum*. **Malacothamnus densiflorus* (S. Wats.) Greene.
- M. densiflorum* var. *viscidum* (Abrams) Estes, Bull. S. Calif. Acad. Sci. **24**: 85. 1925. Basionym: *Malvastrum viscidum* Abrams, Bull. Torrey Bot. Club **34**: 264. 1907. TYPE: California: San Diego Co. Dry hillsides near El Nido, Harvey's Ranch, *Abrams 3528* (Holotype: NY!; isotypes: DS, F!, GH, PH, US). **Malacothamnus densiflorus* (S. Wats.) Greene var. *viscidus* (Abrams) Kearney, Leafl. W. Bot. **6**: 129. 1951.
- M. depressum* (Bentham) Svenson. **Malvastrum tomentosum* (L.) S.R. Hill subsp. *tomentosum*. See text.
- M. digitatum* Greene, Leafl. Bot. Observ. Crit. **1**: 154. 1905. TYPE: New Mexico: Sierra Co. Kingston, alt. 6600 ft., *Metcalf 9947* (Holotype: US!; isotypes: CAS, F!, G!, UC!, US!). **Sphaeralcea digitata* (Greene) Rydberg, Bull. Torrey Bot. Club **40**: 58. 1913.
- M. diminutivum* (Philippi) E. G. Baker, J. Bot. **32**: 36. 1894. Basionym: *Malva diminutiva* Philippi, Anales Mus. Nac. Chile Bot. **2**: 8. 1891. TYPE: Chile: Prov. Tarapacá, Paroma, alt. 3800 m, *Philippi 1822* (Holotype: SGO no 41024; isotype: SGO no 51995).

- **Nototriche diminutiva* (Phil.) I. M. Johnston, J. Arnold Arbor. **19**: 260. 1938.
- M. dimorphum* J. T. Howell. **Malvastrum tomentosum* (L.) S. R. Hill subsp. *tomentosum*. See text.
- M. dissectum* Harvey in Harvey & Sonder, Fl. Cap. **1**: 164. 1860, non Cockerell, 1900. TYPE: South Africa: Cape Province. Swellendam District, sandy hills near Kochmann's Kloof, *Ecklon & Zeyher* 295 (Holotype: s). **Anisodonteia dissecta* (Harvey) Bates, Gentes Herb. **10**: 338. 1969.
- M. dissectum* (Nutt. in Torr. & Gray) Cockerell, Bull. Torrey Bot. Club **27**: 87. 1900, non Harvey in Harvey & Sonder, 1860. Nom. illegit. Basionym: *Sida dissecta* Nuttall in Torr. & Gray, Fl. N. Amer. **1**: 235. 1838. See *M. coccineum* var. *dissectum* above. **Sphaeralcea coccinea* (Nutt.) Rydberg var. *coccinea*.
- M. dissectum* var. *cockerellii* (A. Nelson) A. Nelson in Coulter & Nelson, Man. Bot. Cent. Rocky Mtns. 318. 1909. Basionym: *Malvastrum cockerellii* A. Nelson, see above. **Sphaeralcea coccinea* (Nutt.) Rydb. var. *coccinea*.
- M. divaricatum* (Andrews) Gray & Harvey in Harvey & Sonder, Fl. Cap. **1**: 163. 1860. Basionym: *Malva divaricata* Andrews, Bot. Repos. 3: t. 182. 1801. TYPE: t. 182, chosen as lectotype by Bates (1969), based upon plants raised at Hammersmith Nursery. **Anisodonteia capensis* (L.) Bates, Gentes Herb. **10**: 327. 1969.
- M. dryadifolium* Solms-Laubach, Bot. Zeitung **65**: 131, t. 2, f. 6. 1907. TYPE: Bolivia: Dep. Chuquisaca. Near Sucre, alt. 4000 m, *Steinmann s.n.* (no examples known, possibly lost). **Acaulimalva dryadifolia* (Solms) Krap., Darwiniana **19**: 19. 1974.
- M. dudleyi* Eastwood, Leafl. W. Bot. **1**: 218. 1936. TYPE: California: San Luis Obispo Co. Fern Canyon, 2 mi W of Paso Robles, *Dudley s.n.* (Holotype: CAS no 146103). **Malacothamnus jonesii* (Munz) Kearney, Leafl. W. Bot. **6**: 135. 1951.
- M. dusenii* Ekman, Ark. Bot. **13**: 5, t. 1, f. 3. 1914. TYPE: Brazil: Est. Paraná, Serrado Mar, Ypiranga, along railway, *Dusén* 7084 (Holotype: s!; isotypes: F!, MICH!, MO!, s!). **Monteiroa dusenii* (Ekman) Krap., Biol. Soc. Argent. Bot. **3**: 242. 1951.
- M. elatum* (E. G. Baker) A. Nelson, Bot. Gaz. (Crawfordsville) **34**: 25. 1902. Basionym: *Malvastrum coccineum* var. *elatum* E. G. Baker, see above. **Sphaeralcea coccinea* (Nutt.) Rydb. var. *elata* (E. G. Baker) Kearney in Kearney & Peebles.

- M. englerianum* E. Ulbrich, Bot. Jahrb. Syst. **42**: 115. 1909. TYPE: Peru: Dep. Ancash, Prov. Cajatambo between Tallenga and Piscapaccha, alt., 3800–4000 m, *Weberbauer* 2888 (Holotype: B (lost)—photo Field Mus. ser. no. 9312—F!, fragment of holotype—K!; isotype: MOL). **Acaulimalva engleriana* (Ulbr.) Krap., *Darwiniana* **19**: 19. 1974.
- M. erodifolium* (Presl) E. G. Baker, J. Bot. **28**: 369. 1890. Basionym: *Malva erodiifolia* Presl, Reliq. Haenk. **2**: 122. 1835. TYPE: Chile: *Haenke* (Holotype: presumably PR, not seen). This is not *Malvastrum* (corolla purple). The description rather closely resembles that of *Tarasa humile* (Gillies ex Hook & Arn.) Krap., Bol. Soc. Argent. Bot. **5**: 117. 1954.
- M. exhumatum* Cockerell, Bull. Torrey Bot. Club **33**: 311, f. 5. 1906. TYPE: fossil specimen — Colorado: S W of Florissant, (Oligocene), *Henderson & Ramaley* (Holotype: NY). The illustration shows the leaf of a *Sphaeralcea*. **Sphaeralcea exhumatum* (Cockerell) S. R. Hill, *comb. nov.*
- M. exile* A. Gray in Ives, Rep. Colorado River Bot.: **8**. 1861. TYPE: S W United States: Colorado River, sandy areas, Pyramid Canyon, *Newberry s.n.* (Holotype: GH!; isotype: US!). **Eremalche exilis* (A. Gray) Greene, Leafl. Bot. Observ. Crit. **1**: 208. 1906.
- M. famatinense* Hieronymus ex A. W. Hill, Bot. Jahrb. Syst. **37**: 581, 1906, pro syn. **Nototriche famatinense* A. W. Hill, Bot. Jahrb. Syst. **37**: 581. 1906.
- M. fasciculatum* (Nuttall ex Torrey & Gray) Greene, Fl. Franciscana: 108. 1891. Basionym: *Malva fasciculata* Nuttall in Torrey & Gray, Fl. N. Am. **1**: 225. 1838. TYPE: California: “Santa Barbara”, possibly San Diego Co. instead, *Nuttall s.n.* (Holotype: NY; isotypes: GH, PH!). **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *fasciculatus*, Leafl. Bot. Observ. Crit. **1**: 208. 1906.
- M. fasciculatum* var. *catalinense* (Eastwood) McMinn, Man. Calif. Shrubs: 348. 1939. Basionym: *Malvastrum catalinense* Eastwood, see above. **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene subsp. *catalinensis* (Eastw.) R. W. Thorne.
- M. fasciculatum* var. *laxiflorum* (A. Gray) Munz & I. M. Johnston, Bull. Torrey Bot. Club **51**: 296. 1924. Basionym: *Malvastrum thurberi* var. *laxiflorum* A. Gray, Proc. Amer. Acad. Arts **22**: 291, in adn. 1887. This name based upon *Malvastrum splend-*

- dum* Kellogg, Proc. Calif. Acad. Sci. **1**: 65. 1855. TYPE: *Wallace s.n.*, not preserved. Neotype: California: Los Angeles Co. Santa Monica Mtns., Mulholland Hwy 0.4 mi E of Malibu Lake, *Bates 2493* (Neotype: LA no. 47326). **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *laxiflorus* (A. Gray) Kearney, Leafl. W. Bot. **6**: 137. 1951.
- M. fasciculatum* var. *nesioticum* (Robins.) McMinn, Man. Calif. Shrubs: 348, f. 396. 1939. Basionym: *Malvastrum nesioticum* Robinson in A. Gray, Syn. Fl. Amer. **1**, 1: 312. 1897. TYPE: California: Santa Barbara Co. Island of Santa Cruz, *Greene s.n.* (Lectotype: GH; isotypes: CAS, ND). **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *nesioticus* (Robins.) Kearney, Leafl. W. Bot. **6**: 139. 1951.
- M. fasciculatum* var. *nuttallii* (Abrams) McMinn, Man. Calif. Shrubs: 348, f. 397, 1939. Basionym: *Malacothamnus nuttallii* Abrams, Bull. New York Bot. Gard. **6**: 417. 1910. TYPE: California: Ventura Co. Casitas Pass, *Abrams s.n.* (Holotype: DS no. 31553; isotypes: DS, GH). **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *nuttallii* (Abrams) Kearney, Leafl. W. Bot. **6**: 138. 1951.
- M. fasciculatum* var. *typicum* Estes, Bull. S. Calif. Acad. Sci. **24**: 83. 1925. The typical variety, see *M. fasciculatum* above. **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *fasciculatus*.
- M. fiebrigii* Ulbrich, Bot. Jahrb. Syst. **42**: 113. 1909. TYPE: Bolivia: southern region near Puna Patanca, marshy places, alt. 3800 m, *Fiebrig 2963* (Holotype: B (lost) — photo Field Mus. ser. no. 9313 — F!; isotypes: G, K, M). **Acaulimalva nubigena* (Walp.) Krap., Darwiniana **19**: 22. 1974.
- M. flabellatum* Weddell, Chlor. And. **2**: 281. 1861. TYPE: Bolivia: Dep. La Paz. Summit of the Cordillera of La Paz, *D'Orbigny 332* (Lectotype: P). **Nototriche flabellata* (Wedd.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. foliosum* S. Watson, Proc. Amer. Acad. Arts **20**: 356. 1885. TYPE: Mexico: Baja California, Santo Tomás, near the coast, *Orcutt s.n.* (Holotype: GH; isotypes: PENN!, PH!, UC, US!). **Malacothamnus foliosus* (S. Wats.) Kearney, Leafl. W. Bot. **6**: 122. 1951.
- M. fragrans* (Jacquin) Gray & Harvey in Harvey & Sonder, Fl. Cap. **1**: 159. 1860, non Eastwood, 1936. Basionym: *Malva fragrans*

- Jacquin, Horti. Bot. Vindob. 3: 20, t. 33. 1776. TYPE: t. 33 chosen as lectotype by Bates (1969). **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. 10: 368. 1969.
- M. fragrans* Eastwood, Leafl. W. Bot. 1: 218. 1936, non Gray & Harvey in Harvey & Sonder, 1860. TYPE: California: San Luis Obispo Co. El Dorado School near Santa Margarita, *Wall* s.n. (Holotype: CAS no. 204656; isotypes: GH, US!). **Malacothamnus niveus* (Eastw.) Kearney, Leafl. W. Bot. 6: 123. 1951.
- M. fremontii* Torrey ex Gray, Mem. Amer. Acad. Arts n.s. 4:21, in adn. 1849. TYPE: California: interior, *Fremont* s.n. (Holotype: NY; isotypes: GH, MO!). **Malacothamnus fremontii* (Torr. ex Gray) Greene, Leaf. Bot. Observ. Crit. 1: 208. 1906.
- M. fremontii* var. *cercophorum* Robinson in Gray, Syn. Fl. N. Am. 1, 1: 311. 1897. TYPE: California: Alameda Co., Arroyo del Valle, *Greene* s.n. (Holotype: UC no. 18795; isotype: GH). **Malacothamnus fremontii* (Torr. ex Gray) Greene subsp. *cercophorus* (Robins.) Munz, Aliso 4: 94. 1958. ("cercophorum").
- M. fremontii* subsp. *exfibulosum* (Jepson) Wiggins ex Abrams, Illustr. Fl. Pacif. St. 3: 95. 1951. Basionym: *Sphaeralcea fremontii* (Torr. ex Gray) Jepson var. *exfibulosus* Jepson, Fl. Calif. 2: 500. 1936. TYPE: California: Yolo Co. Putah Creek, near Winters, gravel bed. *Jepson 16741* (Holotype: JEPS no. 2869). **Malacothamnus helleri* (Eastw.) Kearney, Leafl. W. Bot. 6: 124. 1951.
- M. fremontii* var. *helleri* (Eastwood) McMinn, Man. Calif. Shrubs: 341, f. 388. 1939. Basionym: *Malvastrum helleri* Eastwood, Leafl. W. Bot. 1: 217. 1936. TYPE: California: Colusa Co. Near Ladoga, *Heller 13242* (Holotype: CAS no. 52632; isotypes: DS, F!, MO, NY, PENN!, PH!, US, WIS!). **Malacothamnus helleri* (Eastw.) Kearney, W. Bot. 6: 124. 1951.
- M. fremontii* var. *niveum* (Eastwood) McMinn, Man. Calif. Shrubs: 343, f. 389. 1939. Basionym: *Malvastrum niveum* Eastwood, Leafl. W. Bot. 1: 232. 1936. Based upon *Malvastrum fragrans* Eastwood, see above. **Malacothamnus niveus* (Eastwood) Kearney, Leafl. W. Bot. 6: 123. 1951.
- M. fremontii* var. *orbiculatum* (Greene) I. M. Johnston, Pl. World 22: 109. 1919. Basionym: *Malvastrum orbiculatum* Greene, Fl. Francisc.: 109, 1891. TYPE: California; Kern Co. Mountains S of Tehachapi, *Greene* s.n. (Holotype: ND no. 39083). **Malaco-*

- thamnus orbiculatus* (Greene) Greene, Leafl. Bot. Observ. Crit. **1**: 208. 1906.
- M. gabrielense* Munz & I. M. Johnston, Bull. Torrey Bot. Club **52**: 223. 1925. TYPE: California: Los Angeles Co. Arraster, north slope of San Gabriel Mountains, alt. 3100 ft., *Peirson* 774 (Holotype: POM no. 9927; isotypes: JEPS, POM, RSA). **Malacothamnus marrubiioides* (Dur. & Hilger) Greene, Leafl. Bot. Observ. Crit. **1**: 208. 1906.
- M. garckeanum* K. Schumann in Martius, Fl. Bras. **12**, 3: 267, t. 52, f. 1. 1891. TYPE: Uruguay: wet sandy places near Montevideo, *Arechavaleta* 288 (Holotype: presumably MVM). **Monteiroa glomerata* (Hook. & Arn.) Krap., Bol. Soc. Argent. Bot. **3**: 239. 1951.
- M. garckeanum* var. *paranense* K. Schumann in Martius, Fl. Bras. **12**, 3: 267, t. 52, f. 1. 1891 ("paranensis"). TYPE: Brazil: Paraná River, *Tweedie* s.n. (No extant specimens known). **Monteiroa glomerata* (Hook. & Arn.) Krap., Bol. Soc. Argent. Bot. **3**: 239. 1951.
- M. geranioides* (Schlecht. & Cham.) Hemsley, Biol. Centr. Am. Bot. **1**: 99. 1879. Basionym: *Malva geranioides* Schlechtendal & Chamisso, Linnaea **5**: 226. 1830, non Gillies ex Hook. & Arn., 1833. TYPE: Mexico: Veracruz, Llanos de Perote, *Schiede & Deppe* 577 (Holotype: HAL no. 43666; isotype: B (lost) — photo Field Mus. ser. no. 18272 at F!). **Tarasa geranioides* (Schlecht. & Cham.) Krap., Bol. Soc. Argent. Bot. **5**: 125. 1954.
- M. geranioides* var. *galanderi* (O. Kuntze) Seckt, Fl. Cord: 346. 1930. Basionym: *Malveopsis geranioides* (Schlecht. & Cham.) O. Ktze. var. *galanderi* O. Kuntze, Rev. Gen. **3**, 2: 21. 1898. TYPE: Argentina: Prov. Córdoba. Cañada del Molina, *Galander* s.n. (Holotype: NY!). **Tarasa antofagastana* (Phil.) Krap., Bol. Soc. Argent. Bot. **5**: 130. 1954.
- M. geranioides* var. *subsessile* (O. Kuntze) Seckt, Fl. Cord.: 346. 1930. Basionym: *Malveopsis geranioides* (Schlecht. & Cham.) O. Kuntze var. *subsessilis* O. Kuntze, Rev. Gen. **3**, 2: 21. 1898. TYPE: Argentina: Prov. Córdoba, Sierra Córdoba, *Kurtz* s.n. (Holotype: NY!). **Tarasa antofagastana* (Phil.) Krap., Bol. Soc. Argent. Bot. **5**: 130. 1954.
- M. gilliesii* (Steud.) J. G. Baker, Gard. Chron. **24**: 166. 1885. Basionym: *Malva gilliesii* Stüdel, Nom. Bot. **2**: 94. 1841, non Phi-

- lippi, 1870. Based upon: *Malva geranioides* Gillies ex Hooker & Arnott, Bot. Misc. 3: 152. 1833, non Schlecht. & Cham., 1830. Nom. illegit. TYPE: Argentina: Mendoza, Gillies s.n. (Disposition of types not known, duplicate OXF!). **Modiolastrum gilliesii* (Steud.) Krap., Lilloa 19: 123, in adn. 1949.
- M. glomeratum* (Hooker & Arnott) Grisebach, Abh. Königl. Ges. Wiss. Göttingen 24: 42. 1879. Basionym: *Malva glomerata* Hooker & Arnott, Bot. Misc. 3: 151. 1833. TYPE: Argentina: woods of the Paraná, Buenos Aires, Tweedie 1037 (Holotype: K; Prob. isotype: OXF!). **Monteiroa glomerata* (Hook. & Arn.) Krap., Bol. Soc. Argent. Bot. 3: 239. 1951.
- M. gracile* Eastwood, Leaflet. W. Bot. 1: 219. 1936. TYPE: California: San Luis Obispo Co. Road between Arroyo Grande and Huasna, Eastwood 14996 (Holotype: CAS; isotypes: CAS, DS, F! GH, POM, RSA, US!). **Malacothamnus gracilis* (Eastw.) Kearney, Leaflet. West. Bot. 6: 130. 1951.
- **M. grandiflorum* Krapovickas. See text.
- M. greemanianum* Rose, Contr. U. S. Natl. Herb. 5: 180. 1897. TYPE: Mexico: Federal District, Valley of Mexico near Contreras at Eslava, Pringle 6582 (Holotype: US no. 316693!; isotypes: BKL! BM, F! G, GH! K, MO! ND, NY! PH! UC, VT!). **Kearnemalvastrum subtriflorum* (Lag.) Bates, Brittonia 19: 232. 1967.
- M. grossulariifolium* (Hook. & Arn.) A. Gray, Mem. Amer. Acad. Arts n.s. 4: 21, in adn. 1849 ("grossulariaefolium"). Basionym: *Sida grossulariifolia* Hooker & Arnott, Bot. Beechey Voy.: 326. 1838 ("grossulariaefolia"). See *M. coccineum* var. *grossulariifolium* above. **Sphaeralcea grossulariifolia* (Hook. & Arn.) Rydberg.
- M. grosulariifolium* (Cavanilles) Gray & Harvey in Harvey & Sonder, Fl. Cap. 1: 161. 1860 ("grossulariaefolium") quoad basionym, non Gray, 1849. Basionym: *Malva grosulariifolia* Cavanilles, Diss. 2: 71, t. 24, f. 2. 1786. ("grosulariaefolia"). TYPE: The lectotype chosen by Bates (1969) is t. 169, f. 207 in Dillenius, Hort. Eltham. 2: 209. 1732. **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. 10: 368. 1969.
- M. grosulariifolium sensu* Garcke, Bot. Zeitung 22: 11. 1864, ("grossularifolium"), excl. basionym, non Gray, 1849 nec Gray & Harvey, 1860. **Anisodonteia biflora* (Desr.) Bates, Gentes Herb. 10: 340. 1969.

- M. grosulariifolium* sensu A. Gray & Harvey in Harvey & Sonder, Fl. Cap. **1**: 161. 1860 ("grossulariaefolium"), excl. basionym. **Anisodonteia triloba* (Thunb.) Bates, Gentes Herb. **10**: 363. 1969.
- M. grosulariifolium* var. β *parvifolium* Harvey in Harvey & Sonder, Fl. Cap. **1**: 161. 1860, excl. specim. Drège 7322. TYPE: South Africa: Cape Province, Beaufort West District, Nieuweveldsbergen near Beaufort, alt. 3000–5000 ft., Drège s.n. (Lectotype: s; isotypes: G! K, L, MO, P). **Anisodonteia triloba* (Thunb.) Bates, Gentes Herb. **10**: 363. 1969.
- M. guaraniticum* Hassler. **Malvastrum tomentosum* (L.) S. R. Hill. See text.
- **M. guatemalense* Standley & Steyermark. See text.
- M. hallii* Eastwood, Leaf. W. Bot. **1**: 216, 1936. TYPE: California: Contra Costa Co., west side of Pine Canyon, Mt. Diablo, Hall & Essig 10131 (Holotype: CAS no. 143419; isotypes: DS, F! LA, MO! NY! POM, UC, US!, WIS!) **Malacothamnus hallii* (Eastw.) Kearney, Leaf. W. Bot. **6**: 134. 1951.
- M. hauthalii* Ulbrich, Bot. Jahrb. Syst. **42**: 114. 1909. TYPE: Bolivia: Dep. La Paz. Between Palca and Illimani, alt. 4000–4800 m, Hauthal 311 and 347 (Fragment of type specimens at K! but unnumbered; Photo of Hauthal 347 (B) available at Field Mus. ser. no. 9315—F!). **Acaulimalva dryadifolia* (Solms) Krap., Darwiniana **19**: 19. 1974.
- M. helleri* Eastwood, Leaf. W. Bot. **1**: 217. 1936. **Malacothamnus helleri* (Eastw.) Kearney. See *M. fremontii* var. *helleri*.
- M. heterophyllum* Grisebach, Abh. Königl. Ges. Wiss. Göttingen **24**: 43. 1879. TYPE: Bolivia: Tarija, Lorentz & Hieronymus 971 (Lectotype: GOET!; isotypes: CORD., SI, UC). **Tarasa heterophylla* (Griseb.) Krap., Bol. Soc. Argent. Bot. **5**: 124. 1954.
- M. hinkleyorum* I. M. Johnston, Contr. Gray Herb. n.s. **70**: 73. 1924. TYPE: Peru: Dep. Arequipa. South slope of Chachani Mt., near Arequipa, Hinkley & Hinkley 43 (Holotype: GH; isotype: US!) **Urocarpidium chilense* (Braun & Bouché) Krap., Darwiniana **10**: 619. 1954.
- M. hirtipes* Spegazzini, Physis (Buenos Aires) **3**: 168. 1917. TYPE: Argentina: Prov. Salta. Nevado de Cachi, alpine meadows, alt. 4000 m, Spegazzini 20001 (Holotype: LP). **Nototriche hirtipes* (Spegazzini) B. L. Burtt & A. W. Hill, Kew Bull.: 130. 1948.

This may be a synonym of *Nototriche anthemidifolia* (Remy) A. W. Hill (see Krapovickas, 1957).

**M. hispidum* (Pursh) Hochreutiner. *See text.*

M. hornschurchianum (Walpers) Macbride, Publ. Field Mus. Nat. Hist., Bot. Ser. **13**, **3a**: 519. 1956. Basionym: *Malva hornschurchiana* Walpers, Nov. Actorum Acad. Caes. Leop. – Carol. Nat. Cur. 19, suppl. **1**: 303. 1843. TYPE: Peru: Dep. Arequipa, Arequipa, *Meyen s.n.* (Holotype: B (lost) — photo Field Mus. ser. no. 9332). **Tarasa hornschurchiana* (Walp.) Krap., Bol. Soc. Arg. Bot. **5**: 139. 1954. Considered a synonym of *T. capitata* (Cav.) Bates by Bates, Gentes Herb. **9**: 388. 1965.

M. howellii Eastwood, Leaf. W. Bot. **1**: 220. 1936. TYPE: California: Contra Costa Co. Nortonville,, *Howell 6470* (Holotype: CAS no. 204366; isotypes: F! GH, MO, POM, US!). **Malacothamnus howellii* (Eastw.) Kearney, Leaf. W. Bot. **6**: 126. 1951.

M. howellii var. *cordatum* Eastwood, Leaf. W. Bot. **2**: 220. 1936. TYPE: California: Stanislaus Co. Junto del Puerto Canyon, *Dudley s.n.* (Holotype: CAS no. 227909; isotypes: DS, GH, NY, POM). **Malacothamnus howellii* (Eastw.) Kearney, Leaf. W. Bot. **6**: 126. 1951.

M. humile (Gillies ex Hooker & Arnott) A. Gray, Bot. U. St. Expl. Exped. **1**: 150, in adn. 1854. Basionym: *Malva humilis* Gillies ex Hooker & Arnott, Bot. Misc. **3**: 150. 1833. TYPE: Argentina: Prov. Mendoza. Andes of Mendoza, El Valle Hermoso, *Gillies s.n.* (Holotype: K; isotypes: GH! GL, OXF! SGO). **Tarasa humilis* (Gillies ex Hook. & Arn.) Krap., Bol. Soc. Argent. Bot. **5**: 117. 1954.

M. humile var. *subacaule* (Philippi) Reiche, Anales Univ. Chile **91**: 382. 1895. Basionym: *Malva subacaulis* Philippi, Anales Univ. Chile **82**: 14. 1893, non Coss ex E. G. Baker, 1890. TYPE: Chile: Prov. Curicó, hot springs at Peteroa, *Vidal 2332* (Holotype: SGO no. 52006; isotype: SGO no. 41013). **Tarasa humilis* (Gillies ex Hook. & Arn.) Krap., Bol. Soc. Argent. Bot. **5**: 117. 1954.

M. hypomadarum Sprague, Gard. Chron. **43**: 394, in adn., f. 176. 1908. TYPE: Cultivated material from the nursery of Veitch & Sons (Holotype: K; isotype: K!). **Anisodonteia* × *hypomadarum* (Sprague) Bates, Gentes Herb. **10**: 250. 1969. (“*hypomandarum*”).

M. incanum (Godron) Thellung, Mém. Soc. Sci. Nat. Cherbourg ser. **4**, 38: 377. 1912. Basionym: *Malva incana* Godron, Mém.

- Sect. Sci. Acad. Sci. Montpellier **1**: 419. 1853, non Presl, 1835. TYPE: France: an adventive at Port-Juvénal, 15 October 1852, *Touchy s.n.* (Holotype: MPU!). Thellung's discussion and citation of *Fiebrig 3083* as a representative specimen led Krapovickas (1957) to interpret this as: **Sphaeralcea bonariensis* (Cav.) Griseb., Abh. Königl. Ges. Wiss. Göttingen **19**: 92. 1874.
- M. insulare* Kearney, Leaf. W. Bot. **6**: 167. 1952. TYPE: Ecuador: Galápagos Islands. Albemarle (Isabella) Island, summit of Tagus Cove Mountain, *Howell 9570* (Holotype: CAS no. 362992). **Urocarpidium insulare* (Kearney) Krap., Darwiniana **10**: 631. 1954.
- *M. interruptum* K. Schumann in Martius. *See text.*
- M. involucratum* Robinson in A. Gray, Syn. Fl. N. Am. **1**, 1: 310. 1897. TYPE: California: Monterey Co., at Jolon, *Brandeggee s.n.* (Lectotype: GH). **Malacothamnus palmeri* (S. Wats.) Greene var. *involucratus* (Robins.) Kearney, Leaf. W. Bot. **6**: 121. 1951.
- M. jacens* S. Watson, Proc. Amer. Acad. Arts **21**: 417. 1886. TYPE: Mexico: Est. Chihuahua, Norogachi, 150 mi N of Batopilas, *Palmer 430* (Lectotype: GH!; isotypes: K, US!). **Urocarpidium jacens* (S. Wats.) Krap., Darwiniana **10**: 627. 1954.
- M. jacens* var. *genuinum* Hochreutiner, Annuaire Conserv. Jard. Bot. Genève **6**: 32. 1902. The typical variety, see *M. jacens*. **Urocarpidium jacens* (S. Wats.) Krap.
- M. jacens* var. *palmatifidum* Hochreutiner, Annuaire Conserv. Jard. Bot. Genève **6**: 32. 1902. TYPE: Mexico: Est. Chihuahua, Sierra Madre, *Pringle 1574* (Holotype: G!; isotypes: BM! BR! G! UC). **Urocarpidium palmatifidum* (Hochr.) Krap., Darwiniana **10**: 623. 1954.
- M. jonesii* Munz, Bull. S. Calif. Acad. Sci. **24**: 88. 1925. TYPE: California: San Luis Obispo Co. Paso Robles, *Jones 223* (Holotype: POM no. 60429). **Malacothamnus jonesii* (Munz) Kearney, Leaf. W. Bot. **6**: 135. 1951.
- M. jorgensenii* I. M. Johnston, Contr. Gray Herb. n.s. **70**: 76. 1924. TYPE: Argentina: Prov. Tucumán. Near Suncho. *Jørgensen 1389* (Holotype: GH! isotype: MO). **Tarasa jorgensenii* (I. M. Johnst.) Krap., Bol. Soc. Argent. Bot. **5**: 138. 1954. According to Bates (1965) this is a synonym of *Tarasa capitata* (Cav.) Bates, Gentes Herb. **9**: 388. 1965.

- M. kernense* (C. B. Wolf) Munz, *Aliso* **4**: 93. 1958. Basionym: **Eremalche kernensis* C. B. Wolf, *Occas. Pap. Ranch. Santa Ana Bot. Gard.* **1**: 66, f. 18. 1938. TYPE: California: Kern Co. Temblor Valley, 7 mi NW of McKittrick on Lost Hills Rd., alt. 900 ft., *Wolf 8413* (Holotype: RSA; isotypes: CAS, US!). Closely allied and perhaps conspecific with *E. exilis* (A. Gray) Greene.
- M. lacteum* (Aiton) Garcke in Braun & Bouché, *Index Sem. Hort. Bot. Berol.*: 17. 1866. Basionym: *Malva lactea* Aiton, *Hort. Kew.* **2**: 448. 1789. TYPE: Cultivated plant introduced in 1780 by B. Bewick, grown in 1781 at the Royal Botanic Gardens, Kew (Holotype: BM — photos BH neg. no. 15163 and US neg. no. 635). **Kearnemalvastrum lacteum* (Ait.) Bates, *Brittonia* **19**: 231. 1967.
- M. lasiocarpum* (St.-Hilaire & Naudin) Grisebach, *Abh. Königl. Ges. Göttingen* **24**: 43. 1879. Basionym: *Malva lasiocarpa* St.-Hilaire & Naudin, *Ann. Sci. Nat. Bot. ser. 2*, **18**: 45. 1842. TYPE: Brazil: Rio Grande do Sul, probably collected by Sellow (Holotype: presumably RB; isotype: P). **Modiolastrum lateritium* (Hooker) Krap., *Revista Argent. Agron.* **12**: 39. 1945. Cited as a synonym by Krapovickas (1957).
- M. lateritium* (Hooker) Nicholson, *Illust. Dict. Gard.* **2**: 319. 1885. Basionym: *Malva lateritia* Hooker, *Bot. Mag.* **14**: t. 3846. 1841. TYPE: Argentina: Buenos Aires, *Tweedie s.n.* (Holotype: no specimens at K; probable isotype OXF! from Rio de la Plata); **Modiolastrum lateritium* (Hooker) Krap., *Revista Argent. Agron.* **12**: 39. 1945.
- M. laxiflorum* (A. Gray) ex Davidson & Moxley, *Fl. S. Calif.*: 233. 1923, new combinations not indicated. Basionym: *Malvastrum thurberi* var. *laxiflorum* A. Gray, *Proc. Amer. Acad. Arts* **22**: 291, in adn. 1887. See *M. fasciculatum* var. *laxiflorum* above. **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *laxiflorus* (A. Gray) Kearney.
- M. leptophyllum* A. Gray, *Pl. Wright.* **1**: 17. 1852. TYPE: Texas: Between W. Texas and El Paso. New Mexico, *Wright s.n.* (Holotype: GH). **Sphaeralcea leptophylla* (A. Gray) Rydberg, *Bull. Torrey Bot. Club.* **40**: 59. 1913.
- M. limense* (Linnaeus) J. Ball, *J. Linn. Soc. Bot.* **22**: 32. 1885. Basionym: *Malva limensis* Linnaeus, *Cent. Pl.* **2**: 27. 1756. TYPE: America, specimen from *Miller* (Holotype: LINN micro-

- fiche no. 870.6). **Urocarpidium limense* (L.) Krap., Kurtziana **4**: 33. 1967.
- M. lindheimerianum* (Scheele) Walpers. **Malvastrum coromandelianum* (L.) Garcke. *See text.*
- M. linearifolium* Buckley, Proc. Acad. Nat. Sci. Philadelphia **13**: 449. 1861. TYPE: Northern Texas. *Buckley* (Holotype: PH!). **Sida ciliaris* L. var. *fasciculata* (Torr. & Gray) A. Gray, Proc. Amer. Acad. Arts **22**: 294. 1886.
- M. linoide* Hieronymus, Bol. Acad. Nac. Ci. **3**: 336. 1879. TYPE: Argentina: northern bank of Río Negro, hills, far below Carmen de Patagones, *Berg 85* (Holotype: CORD). **Lecanophora ecristata* (A. Gray) Krap., Darwiniana **9**: 264. 1950.
- M. lobbii* E. G. Baker, J. Bot. **29**: 365. 1891. TYPE: Colombia? *Lobb* (Holotype: K). **Nototriche lobbii* (E. G. Baker) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. lobulatum* Weddell ex Mandon, Bull. Soc. France **12**: 82. 1865. Nomen nudum, new comb. not indicated. Presumed basionym: *Malva parnassiiifolia* (Hk.) Weddell var. β *lobulata* Weddell, Chlor. And. **2**: 276. 1861. TYPE: Bolivia: Dep. Chuquisaca: between río Pilcomayo and the town of Camargo, *Weddell 3931* (Holotype: P). The specimen cited by Mandon, *Mandon 799*, is the type of *Malvastrum obcuneatum* E. G. Baker. **Acaulimalva nubigena* (Walp.) Krap., Darwiniana **19**: 22. 1974.
- M. longirostre* Weddell, Chlor. And. **2**: 281. 1861. TYPE: Peru: Dep. Cuzco, Andes of Cuzco, *Castelnau s.n.* (Holotype: P). **Nototriche longirostris* (Wedd.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. macleanii* A. Gray, Bot. U. St. Expl. Exped. **1**: 152, in adn. 1854 ("macleani"). TYPE: Peru: High Andes, *Macleane s.n.* (Holotype: K). **Nototriche macleanii* (A. Gray) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. macrostachyum* (Presl) Hemsley. **Malvastrum americanum* (L.) Torrey in Emory. *See text.*
- M. mandonianum* Weddell, Chlor. And. **2**: 282. 1861. TYPE: Bolivia: Cordillera of Sorata, *Mandon s.n.* (Lectotype: P). **Nototriche mandoniana* (Wedd.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. mandonii* (E. G. Baker) Macbride, Publ. Field Mus. Nat. Hist., Bot. Ser. **13**, **3a**: 520. 1956 ("mandoni"). Basionym: *Sphaeral-*

- cea mandonii* E. G. Baker, J. Bot. **31**: 364. 1893. ("mandoni").
TYPE: Bolivia: Dep. La Paz, Prov. Larecaja, near Sorata in woodlands, alt. 2800–3000 m, *Mandon* 808 (Holotype: K; isotypes: BM, G, NY!). **Tarasa mandonii* (E. G. Baker) Kearney, Leaf. W. Bot. **5**: 190. 1949.
- M. marruboides* Durand & Hilger, J. Acad. Nat. Sci. Philadelphia ser. 2, **3**: 38. 1855. TYPE: California, Madera or Fresno Co. Fort Miller (Millerton), *Heermann* s.n. (Holotype: P; isotypes: GH, PH!, US!). **Malacothamnus marruboides* (Dur. & Hilg.) Greene, Leaf. Bot. Observ. Crit. **1**: 208. 1906.
- M. marruboides* var. *paniculatum* A. Gray, Proc. Amer. Acad. Arts **22**: 290, in adn. 1887. TYPE: Mexico: Baja California. Ensenada de Todos Santos, *Orcutt* s.n. (Holotype: GH; isotypes: UC, US!). **Malacothamnus paniculatus* (A. Gray) Kearney, Leaf. W. Bot. **6**: 123. 1951.
- M. marruboides* var. *viscidum* (Abrams) McMinn, Man. Calif. Shrubs: 345. 1939. Basionym: *Malvastrum viscidum* Abrams. See *M. densiflorum* var. *viscidum* above. **Malacothamnus densiflorus* (S. Wats.) Greene var. *viscidus* (Abrams) Kearney.
- M. megalorrhizum* (Philippi) E. G. Baker, J. Bot. **29**: 363. 1891. Basionym: *Sida megalorrhiza* Philippi, Fl. Atac.: 11. 1860. TYPE: Chile: Atacama, Alto de Paquios, 23° 50' lat., alt. 12600 ft., *Philippi* s.n. (Holotype: SGO no. 51954; isotype: K). **Noto-triche megalorrhiza* (Phil.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. mendocinense* Eastwood, Leaf. W. Bot. **2**: 188. 1939. TYPE: California: Mendocino Co. 5 mi. from Ukiah towards Booneville, *Eastwood & Howell* 4582 (Lectotype: CAS no. 249530), **Malacothamnus mendocinensis* (Eastw.) Kearney, Leaf. W. Bot. **6**: 133. 1951.
- M. meridae* A. W. Hill, J. Linn. Soc. Bot. **39**: 226. 1909. TYPE: Venezuela: Prov. Merida, Páramo de Mucuchies, alt. 3900 m, *Linden* 1425 (Lectotype: K; isotypes: BM, OXF! P). **Acaulimalva purdiaei* (A. Gray) Krap., Darwiniana **19**: 26. 1974. See *M. acaule* var. *granatense*.
- M. mexicanum* (Schauer) Hemsley, Biol. Centr. Am. Bot. **1**: 99. 1879. Basionym: *Malva mexicana* S. Schauer, Linnaea **20**: 724. 1847. non Sessé & Mociño, 1889. TYPE: Mexico: Est. Hidalgo. Near Zimapan, *Aschenborn* 614 (Holotype: B (lost)—photo

- Field Mus. neg. 18273). **Kearnemalvastrum subtriflorum* (Lag.) Bates, *Brittonia* **19**: 232. 1967.
- M. meyenii* Solms ex Ulbrich, *Bot. Jahrb. Syst.* **42**: 121. 1908, pro syn. **Nototriche meyenii* Ulbrich, *Bot. Jahrb. Syst.* **42**: 120. 1908.
- M. micranthum* Wooton & Standley, *Contr. U. S. Natl. Herb.* **16**: 147. 1913, non Rusby, 1920. TYPE: New Mexico: Tiznitzin, *Wooton 2673* (Holotype: US; isotype: RM). **Sphaeralcea coccinea* (Pursh) Rydberg var. *elata* (E. G. Baker) Kearney, *Univ. Calif. Publ. Bot.* **19**: 97. 1936.
- M. micranthum* Rusby, *Descr. New Sp. S. Amer. Pl.*: 55. 1920, non Woot. & Standl., 1913. nom. illeg. TYPE: Bolivia: Dep. La Paz, La Paz, alt. 3700 m., *Buchtien 2893* (Holotype: NY; isotype: US!). **Tarasa tenella* (Cav.) Krap., *Bol. Soc. Argent. Bot.* **5**: 123. 1954.
- M. modioliforme* (O. Kuntze) K. Schumann, *Bot. Jahresber. (Just)* **26**: 355. 1898. Basionym: *Malveopsis modioliformis* O. Kuntze, *Rev. Gen.* **3**, 2: 21. 1898. TYPE: Argentina: Prov. Formosa, Colonia Aquino on the Río Paraguay near the mouth of the Río Tebicuari, *Kuntze s.n.* (Holotype: NY; isotypes: B (lost) — photo Field Mus. ser. no. 9328 — F!, US). **Modiolastrum malvifolium* (Griseb.) K. Schumann in Martius, *Flor. Bras.* **12**, **3**: 277. 1891.
- M. mollendoense* Ulbrich, *Bot. Jahrb. Syst.* **42**: 120. 1909. TYPE: Peru: Dep. Arequipa, near Mollendo, sandy hill, alt. 100 m, *Weberbauer 1548* (Holotype: B (lost) — photo Field Mus. ser. no. 9319 — F!). **Palaua guntheri* Bruns, *Mitt. Inst. Allg. Bot. Hamburg* **8**: 56, t. 8, f. 1–2. 1929.
- M. multicaule* Britton, *Bull. Torrey Bot. Club.* **16**: 153. 1889. Basionym: *Malva multicaulis* Schlechtendal ex Britton, *Bull. Torrey Bot. Club* **16**: 153. 1889, pro syn. TYPE: Peru: Asangaro, *Lechler 1784* (Holotype: K). **Tarasa tenella* (Cav.) Krap., *Bol. Soc. Argent. Bot.* **6**: 123. 1954.
- M. multiflorum* Greene, *Fl. Francisc.*: 109. 1891. TYPE: California: Monterey Co.?, collector? *11* (Holotype: UC). **Sphaeralcea coulteri* (S. Wats.) A. Gray, *Proc. Amer. Acad. Arts* **22**: 291. 1887.
- M. munroanum* (Douglas ex Lindley) A. Gray, *Mem. Amer. Acad. Arts n.s.* **4**: 21, in adn., 1849, excl. syn. *Malva fasciculata* Nutt.

- in Torr. & Gray. Basionym: *Malva munroana* Douglas ex Lindley, Edward's Bot. Reg. **16**: 1306. 1830. TYPE: Barren plains of the Columbia River, *Douglas s.n.* (Holotype: K; isotype: OXF!) **Sphaeralcea munroana* (Douglas ex Lindl.) Spach in Gray, Proc. Amer. Acad. Arts **22**: 292. 1887.
- M. nesioticum* Robinson in A. Gray, Syn. Fl. N. Am. 1, **1**: 312. 1897. See *M. fasciculatum* var. *nesioticum* above. **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *nesioticus* (Robins.) Kearney.
- M. nesioticum* subsp. *nuttallii* (Abrams) Wiggins in Abrams, Illus. Fl. Pacif. St. **3**: 94. 1951. See *M. fasciculatum* var. *nuttallii* above. **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *nuttallii* (Abrams) Kearney.
- M. niveum* Eastwood, Leaflet. W. Bot. **1**: 232. 1936. Nom. nov. for *Malvastrum fragrans* Eastw., an illegitimate name. See *M. fragrans* above. **Malacothamnus niveus* (Eastw.) Kearney, Leaflet. W. Bot. **6**: 123. 1951.
- M. nototrichoides* Hochreutiner, Candollea **15**: 177. 1956. TYPE: Peru: Dep. Arequipa. Tinopalca, alt. 4200 m., *Rauh & Hirsch P. 628* (Holotype: G!). **Tarasa nototrichoides* (Hochr.) Krap., (pers. comm.) This plant strongly resembles *Tarasa geranioides* (Schlecht. & Cham.) Krap.
- M. nubigenum* (Walpers) E. G. Baker, J. Bot. **28**: 370. 1890. Basionym: *Sida nubigena* Walpers, Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 19, Suppl. **1**: 307. 1843. TYPE: Peru: plains around Tissaloman, *Meyen s.n.* (Holotype: B—lost). **Acaulimalva nubigena* (Walp.) Krap., Darwiniana **19**: 22. 1974.
- M. nubigenum* var. *bipinnatifidum* R. E. Fries, Kongl. Svenska Vetenskapsakad. Handl. ser. 2, **24**: 11, t. 2, f. 10. 1974. TYPE: Bolivia: Dep. La Paz. Prov. Ingavi, Viacha, alt. 3850 m, *Asplund 2118* (Holotype: s). **Acaulimalva nubigena* (Walp.) Krap., Darwiniana **19**: 22. 1974.
- M. nudum* K. Schumann in Martius, Fl. Bras. 12, **3**: 274. 1891. TYPE: Lectotypification must await further information on disposition of specimens: Uruguay: clay areas near Montevideo, *Arechavaleta 352* (MVM), Argentina: near Buenos Aires, *Tweedie* (B-(lost) — photo Field Mus. ser. no. 9320 — F!, presumably also at w). **Sphaeralcea decipiens* (St.-Hil. & Naud.) Krap., Lilloa **17**: 216. 1949.

- M. nuttallii* Abrams ex Davidson & Moxley, Fl. S. Calif.: 233. 1923, nomen nudum. New combination not indicated, no reference made to the possible basionym, *Malacothamnus nuttallii* Abrams, Bull. New York Bot. Gard. **6**: 417. 1910. **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *nuttallii* (Abrams) Kearney. See *M. fasciculatum* var. *nuttallii*.
- M. nuttallii* (Abrams) Eastwood, Leaf. W. Bot. **1**: 217. 1936. Basionym: *Malacothamnus nuttallii* Abrams, Bull. New York Bot. Gard. **6**: 417. 1910. See *M. fasciculatum* var. *nuttallii* above. **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *nuttallii* (Abrams) Kearney.
- M. oaxacanum* Rose ex H. B. Davis, Life and Work of C. G. Pringle: 405. 1936, Nom. nud. **Malvastrum bicuspidatum* (S. Watson) Rose subsp. *oaxacanum* S. R. Hill. See text.
- M. obcuneatum* E. G. Baker, J. Bot. **29**: 363. 1891. TYPE: Bolivia: Dep. La Paz, near La Paz. Mandon 799 (Holotype: BM; isotype: GH). **Nototriche obcuneata* (E. G. Baker) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. operculatum* (Cavanilles) E. G. Baker, J. Bot. **28**: 370. 1890. While published with a "?", this combination is valid in accordance with Art. 34 Note 1. of the International Code of Botanical Nomenclature (Stafleu et al., 1972). The same combination was later made by Hochreutiner, Annuaire Conserv. Jard. Bot. Genève **20**: 129. 1917. Basionym: *Malva operculata* Cavanilles, Diss. **2**: 65, t. 35, f. 1. 1786. TYPE: Peru: sandy places, province of Hoara, *Dombey s.n.* (Holotype: MA; isotype: G!). **Tarasa operculata* (Cav.) Krap., Bol. Soc. Argent. Bot. **5**: 134. 1954.
- M. orbiculatum* Greene, Fl. Francisc.: 109. 1891. See *M. fremontii* var. *orbiculatum* above. **Malacothamnus orbiculatus* (Greene) Greene.
- M. orbignyanum* Weddell, Chlor. And. **2**: 279. 1861. TYPE: Bolivia: Dep. Potosi, near Quebrada de las Lagunas, *D'Orbigny 1351* (Holotype: P). **Nototriche orbignyana* (Wedd.) A. W. Hill, Bot. Jahrb. Syst. **37**: 1906.
- M. oriastrum* (Weddell) E. G. Baker, J. Bot. **28**: 370. 1890. Basionym: *Malva oriastrum* Weddell, Chlor. And. **2**: 277. 1861. TYPE: Bolivia: Dep. Chuquisaca, punas, alt. 3500 m, *Weddell 3962* (Holotype: P, fragment-K). **Acaulimalva oriastrum* (Wedd.) Krap., Darwiniana **19**: 24. 1974.

- M. palmeri* S. Watson, Proc. Amer. Acad. Arts **12**: 250. 1877. TYPE: California: San Luis Obispo Co. Cambria, *Palmer 50* (Holotype: GH: isotypes: CAS, F!, NY, PH!, UC, US!). **Malacothamnus palmeri* (S. Wats.) Greene, Leaf. Bot. Observ. Crit. **1**: 208. 1906.
- M. palmeri* var. *involutum* (Robinson) McMinn, Man. Calif. Shrubs: 339. 1939. Basionym: *Malvastrum involutum* Robinson in A. Gray, see above. **Malacothamnus palmeri* (S. Wats.) Greene var. *involutus* (Robins.) Kearney.
- M. palustre* Ekman, Ark. Bot. **13**: 8, t. 1, f. 2. 1914. TYPE: Brazil. Est. Paraná, high plains at Curytiba, swampy woods, *Dusén 8720* (Lectotype: s!; isotypes: F! MICH!, MO!). **Modiolastrum palustre* (Ekman) Krap., Bol. Soc. Argent. Bot. **7**: 38. 1957.
- M. paniculatum* (A. Gray) Wiggins, Madroño **10**: 184. 1950. Basionym: *Malvastrum marrubioides* Durand & Hilger var. *paniculatum* A. Gray, see above. **Malacothamnus paniculatus* (A. Gray) Kearney.
- M. pappei* E. G. Baker, J. Bot. **29**: 166. 1891. TYPE: South Africa: Cape of Good Hope, *Pappe s.n.* (Holotype: K; isotype: TCD). **Anisodonteia procumbens* (Harvey) Bates, Gentes Herb. **10**: 331. 1969.
- M. parishii* Eastwood, Leaf. W. Bot. **1**: 216. 1936. TYPE: California: vicinity of San Bernardino, alt. 300–500 m, *Parish 3804* (Holotype: CAS no. 52756; isotype: UC). **Malacothamnus parishii* (Eastw.) Kearney, Leaf. W. Bot. **6**: 136. 1951.
- M. parnassiiifolia* (Hooker) A. Gray, Bot. U. St. Expl. Exped. **1**: 150, in adn. 1854. (“*parnassiaefolium*”). Basionym: *Sida parnassiiifolia* Hooker, Ic. Pl. ser. 1, **4**: t. 385. 1841. (“*parnassiaefolia*”). TYPE: Ecuador: Prov. Pichincha. Andes of Quito between Guamote and Achupallas, alt. 12000 ft., *Jameson s.n.* (Holotype: K!). **Acaulimalva parnassiiifolia* (Hook.) Krap., Darwiniana **19**: 25. 1974 (“*parnassiaefolia*”).
- M. parnassiiifolium* var. *lobulatum* (Weddell) E. G. Baker, J. Bot. **29**: 171. 1891. Basionym: *Malva parnassiiifolia* (Hk.) Weddell var. β *lobulata* Weddell, Chlor. And. **2**: 276. See *M. lobulatum* above. **Acaulimalva nubigena* (Walp.) Krap.
- M. parryi* Greene, Fl. Francisc.: 108. 1891. TYPE: California: Tulare Co. Tulare, *Parry s.n.* (Lectotype: ND — Greene Herbarium no. 39088). **Eremalche parryi* (Greene) Greene, Leaf. Bot. Observ. Crit. **1**: 208. 1906.

- M. parviflorum* Philippi, Anales Mus. Nac. Chile Bot. **2**: 9. 1891.
TYPE: Chile: Prov. Atacama. Alto de Machuca, *Philippi 1855*
(Lectotype: SGO no. 41050; isotype: K, SGO no. 51992). **Nototriche parviflora* (Phil.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. pearcei* E. G. Baker, J. Bot. **29**: 364. 1891. TYPE: Peru: Dep. Apurimac. Andahuaylas, alt. 13000–14000 ft., *Pearce s.n.* (Lectotype: K). **Nototriche pearcei* (E. G. Baker) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. pedatifidum* A. Gray, Boston J. Nat. Hist. **6**: 160, in adn. 1850.
TYPE: Texas: near Presidio, on the Rio Grande, *Wright s.n.* (42?) (Holotype: GH; isotype: OXF!). **Sphaeralcea pedatifida* (A. Gray) A. Gray, Proc. Amer. Acad. Arts **22**: 291, in adn. 1887.
- M. pediculariifolium* (Meyen) A. Gray, Bot. U. St. Expl. Exped. **1**: 152, in adn. 1854 (“*pediculariaefolium*”). Basionym: *Sida pediculariifolia* Meyen, Reise **1**: 460, in adn. 1834 (“*pedicularifolia*”). TYPE: Peru: Dep. Tacna. high plateau of Tacora near Tissaloma, near pass to Potosì, alt. 4570 m., *Meyen s.n.* (Holotype: B (lost); isotype: K). **Nototriche pediculariifolia* (Meyen) A. W. Hill, Bot. Jahrb. Syst. **37**: 578. 1906 (“*pedicularifolia*”).
- M. pediculariifolium* var. *rugosum* (Philippi) Reiche, Anales Univ. Chile **91**: 383. 1895. Basionym: *Malvastrum rugosum* Philippi, Anales Mus. Nac. Chile Bot. **2**: 9. 1891. TYPE: Chile: Prov. Tarapacá, near Machuca, *Philippi 1818a* (Lectotype: SGO no. 41052; isotype: SGO no. 52013). **Nototriche rugosa* (Phil.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. pennellii* Ulbrich, Notizbl. Königl. Bot. Gart. Berlin **11**: 524. 1932. TYPE: Peru: Dep. Arequipa, Arequipa, alt. 2600–2700 m, *Pennell 13206*. Ulbrich stated that the type was at F, but several searches have failed to locate it there. No other examples are known. The description resembles *Urocarpidium* and Ulbrich allied the plant with *Urocarpidium jacens* (S. Wats.) Krap. It is not a *Malvastrum*.
- M. pentandrum* K. Schumann in Martius, Fl. Bras. **12**, 3: 273. 1892.
TYPE: Argentina: Prov. Catamarca. Cuesta de Muschaca, *Schickendantz 305* (Lectotype: B (lost) — photo Field Mus. ser. no. 9321 — F!; isotype: CORD). **Urocarpidium pentandrum* (K. Schumann) Krap., Darwiniana **10**: 632. 1954.

- M. pentandrum* var. *genuinum* (K. Schumann) Hassler, Feddes Repert. Spec. Nov. Regni Veg. **12**: 496. 1913. Based upon *Malvastrum pentandrum* K. Schumann in Martius, the typical variety, see above. **Urocarpidium pentandrum* (K. Schumann) Krap.
- M. pentandrum* subsp. *spiciflorum* Hassler. **Malvastrum spiciflorum* (Hassler) Krap. See text.
- M. peruvianum* (Linnaeus) A. Gray, Bot. U. St. Expl. Exped. **1**: 146. 1854. Basionym: *Malva peruviana* Linnaeus, Sp. Pl. **2**: 688. 1753. TYPE: grown at Hortus Uppsaliensis, seeds from de Jussieu (Holotype: LINN microfiche no. 870.5; isotype: P — Herb. Juss.). **Urocarpidium peruvianum* (L.) Krap., Darwiniana **10**: 629. 1954.
- M. peruvianum* var. *capitatum* Kurtz ex O. Kuntze, Rev. Gen. **3**, **2**: 21. 1898, nomen nudum, pro syn. **Tarasa antofagastana* (Phil.) Krap., Bol. Soc. Argent. Bot. **5**: 130. 1954. The Kuntze name applied to Kurtz s.n., Sierra Córdoba, Argentina (GOET, NY).
- M. peruvianum* var. *elongatum* Hochreutiner, Candollea **15**: 177. 1956. TYPE: Peru: Dep. Ica. Pongo, desert, alt. 500 m., Rauh & Hirsch P493 (Holotype: G!). **Urocarpidium peruvianum* (L.) Krap., Darwiniana **10**: 629. 1954.
- M. peruvianum* var. *limense* (Linnaeus) E. G. Baker, J. Bot. **29**: 168. 1891. Basionym: *Malva limensis* Linnaeus, Cent. Pl. **2**: 27. 1756. See *M. limense* above. **Urocarpidium limense* (L.) Krap., Kurtziana **4**: 33. 1967.
- M. peruvianum* var. *scorpioides* (Turczaninow) E. G. Baker, J. Bot. **29**: 168. 1891. Basionym: *Malva scorpioides* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou **36**: 562. 1863. TYPE: Peru: Mathews 1006 (Holotype: presumably at KW or CW; isotype: K, OXF!). **Urocarpidium chilense* (Braun & Bouché) Krap., Darwiniana **10**: 619. 1954.
- M. peruvianum* var. *trisectum* Grisebach, Abh. Königl. Ges. Wiss. Göttingen **19**: 90. 1874. TYPE: Argentina: Prov. Catamarca. Near Yukutula, Lorentz 671 (Holotype: GOET!; isotypes: CORD, GOET!). **Tarasa trisecta* (Griseb.) Krap., Bol. Soc. Argent. Bot. **5**: 124. 1954.
- M. phyllanthos* (Cavanilles) A. Gray, Bot. U. St. Expl. Exped. **1**: 152, in adn. 1854. Basionym: *Sida phyllanthos* Cavanilles,

- Diss. **5**: 276, t. 127, f. 4. 1788. TYPE: Peru: *de Jussieu s.n.* (Holotype: MA). **Nototriche phyllanthos* (Cav.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. pichinchense* (Humbolt & Bonpland) A. Gray, Bot. U. St. Expl. Exped. **1**: 152, in adn. 1854. Basionym: *Sida pichinchensis* Humboldt & Bonpland, Voy. Reg. Equin. 6 Bot. sect. 1, **2**: 115, t. 116. 1813. TYPE: Ecuador: Prov. Pichincha, Mt. Rucupichincha, *Bonpland 3032* (Holotype: P). **Nototriche pichinchensis* (Humb. & Bonpl.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. pinnatum* (Cavanilles) A. Gray, Bot. U. St. Expl. Exped. **1**: 154. 1854. Basionym: *Sida pinnata* Cavanilles, Ic. Pl. **5**: 13, t. 422, f. 1. 1799. TYPE: Ecuador: Prov. Chimborazo, foothills at base of Chimborazo, *Neé s.n.* (Holotype: MA). **Nototriche pinnata* (Cav.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. plumosum* (Presl) A. Gray, Bot. U. St. Expl. Exped. **1**: 147. 1854. Basionym: *Malva plumosa* Presl, Reliq. Haenk. **2**: 124. 1835. TYPE: Peru: *Haenke s.n.* (Holotype: PR; isotype: w — photo Field Mus. ser. no. 32644). **Tarasa operculata* (Cav.) Krap., Bol. Soc. Argent. Bot. **5**: 134. 1954.
- M. plumosum* var. *atacamense* E. G. Baker, J. Bot. **29**: 168. 1891. TYPE: Chile: Atacama desert, *Pearce s.n.* (Holotype: K). **Tarasa operculata* (Cav.) Krap., Bol. Soc. Argent. Bot. **5**: 134. 1954. Considered as such by Bates (1965), but placed in the segregate *Tarasa rahmeri* Philippi, Anales Mus. Nac. Chile Bot.: 10, t. 1, f. 1. 1891, by some.
- M. procumbens* Harvey in Harvey & Sonder, Fl. Cap. **1**: 164. 1860. TYPE: South Africa: Gamka River, *Burke & Zeyher 89* (Lectotype: K; isotypes: BM, OXF!, PRE, S, TCD). **Anisodonteia procumbens* (Harvey in Harv. & Sond.) Bates, Gentes Herb. **10**: 331. 1969.
- M. prostratum* (Philippi) Hieronymus, Bol. Acad. Nac. Ci. **4**: 15. 1881. Basionym: *Malva prostrata* Philippi, Anales Univ. Chile **35**: 163. 1870, non Cavanilles, 1786. TYPE: Argentina: Mendoza, *Philippi 210* (Lectotype: SGO no. 52171; isotype: SGO no. 41009). **Sphaeralcea philippiana* Krap., Lilloa **17**: 199. 1949, based on *Malva prostrata* Philippi.
- M. puniceum* Jesson, Kew Bull.: 39. 1916. TYPE: Cultivated plant from J. Ross of Ireland. (Holotype: K). **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.
- M. purdiei* A. Gray, Bot. U. St. Expl. Exped. **1**: 150, in adn. 1854

- ("purdiaei"). TYPE: Colombia: summit of Páramo Colorado, Purdie s.n. (Holotype: GH; isotype: K!). **Acaulimalva purdiei* (A. Gray) Krap., Darwiniana **19**: 26. 1974 ("purdiaei").
- M. purdiei* var. *huantense* E. G. Baker, J. Bot. **29**: 171. 1891. TYPE: Peru: Dep. Ayacucho. Andes of Huanta, alt. 3950–4260 m, Pearce s.n. (Holotype: K). **Acaulimalva betonicifolia* (A. W. Hill) Krap., Darwiniana **19**: 16. 1974 ("betonicaefolia").
- M. purpuratum* (Lindley) E. G. Baker, J. Bot. **28**: 370. 1890. Basionym: *Malva purpurata* Lindley, Edward's Bot. Reg.: t. 1362. 1830. TYPE: Raised in 1826 at Kew, Garden of the Horticultural Society, seeds from MacRae, from Cumbre, a pass in the Chilean Andes (Holotype: presumably K, not confirmed; isotype: G!). **Sphaeralcea purpurata* (Lind.) Krap., Lilloa **17**: 218. 1949, a combination based upon t. 1362.
- M. purpureum* A. W. Hill, J. Linn. Soc. Bot. **39**: 219. 1909. Based upon *Malva purdiei* Weddell, Chlor. And. 2: 275, 1861 ("purdiaei"). TYPE: Colombia: summit of Páramo Colorado, Purdie s.n. (Holotype: presumably P; isotype: K!). **Acaulimalva purpurea* (A. W. Hill) Krap., Darwiniana **19**: 27. 1974. Nomenclaturally but not taxonomically confused; see discussion in A. W. Hill (1909) cited above, and *M. purdiei*.
- M. pygmaeum* sensu Grisebach, Abh. Königl. Ges. Wiss. Göttingen **24**: 43. 1879. **Tarasa tenella* (Cav.) Krap., Bol. Soc. Argent. Bot. **5**: 123. 1954.
- M. pygmaeum* (Remy) E. G. Baker, J. Bot. **29**: 167. 1891. Basionym: *Sida pygmaea* Remy, Ann. Sci. Nat. Bot. ser. 3, **8**: 238. 1847. TYPE: Bolivia: Dep. Tacna, near Laguna de Potosi, alt. 4200–4300 m., D'Orbigny 1359 (Holotype: P — photo Field Mus. ser. no. 35509 — F!). **Nototriche pygmaea* (Remy) A. W. Hill, Trans. Linn. Soc. London **7**: 218. 1909.
- M. racemosum* Harvey in Harvey & Sonder, Fl. Cap. **1**: 163. 1860. Based on *Malva racemosa* E. Meyer in Drège, Zwei Pflanz. Docum. **70**: 201. 1843, nom. nud., non Presl. 1822. TYPE: South Africa: Cape Province, Clanwilliam Dist., between Grasberg River and Waterval, alt. 2500–3000 ft., Drège s.n. (Lectotype: K; isotypes: G!, MO, OXF!, P). **Anisodonteia racemosa* (Harv. in Harv & Sond.) Bates, Gentes Herb. **10**: 351. 1969.
- M. rauhii* Hochreutiner, Candollea **16**: 77. 1957. TYPE: Peru: Dep. Junín, Ticllo, puna, alt. 4800 m., Rauh & Hirsch P261 (Lectotype: G!; Isotype: G!). **Acaulimalva rauhii* (Hochr.) Krap., Darwiniana **19**: 28. 1974.

- M. retusum* (Cavanilles) E. G. Baker, J. Bot. **28**: 370. 1890. Basionym: *Malva retusa* Cavanilles, Diss. **2**: 73, t. 21, f. 1. 1786. TYPE: South Africa: Cape of Good Hope, *Sonnerat s.n.* (Holotype: MA). **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.
- M. rhizanthum* A. Gray, Bot. U. St. Expl. Exped. **1**: 148. 1854. TYPE: Peru: above Baños, *Pickering s.n.* (Holotype: US no. 15210!). **Acaulimalva rhizantha* (A. Gray) Krap., Darwiniana **19**: 31. 1974.
- M. ribifolium* (Schlechtendal) Hemsley, Biol. Centr. Amer. Bot. **1**: 100. 1879. Basionym: *Malva ribifolia* Schlechtendal, Linnaea **11**: 351. 1837, non Viv., 1825. TYPE: Mexico: Mineral del Monte, *Ehrenberg 283* (Holotype: HAL no. 43664 !; isotype: B (lost) — photo Field Mus. ser. no. 323). **Kearnemalvastrum subtriflorum* (Lag.) Bates, Brittonia **19**: 232. 1967.
- M. richii* A. Gray, Bot. U. St. Expl. Exped. **1**: 149. 1854. TYPE: Peru: Dep. Junín, near Obrajillo or Baños, Andes, *Pickering s.n.* (Holotype: US!). **Acaulimalva richii* (A. Gray) Krap., Darwiniana **19**: 32. 1974.
- M. riparium* Hutchinson, Botanist in S. Afr.: 106, in adn. 1946. TYPE: South Africa: Caledon Dist. Near stream bed east of Bot River, *Hutchinson 489* (Holotype: K; isotypes: BM, BCL, PRE). **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.
- M. roseum* (De Candolle) Hemsley, Biol. Centr. Am. Bot. **1**: 100. 1879. Basionym: *Malva rosea* De Candolle, Prodrum **1**: 435. 1824. TYPE: Calque des Dessins de la Flore du Mexique de Mociño et Sessé . . . , plate no. 58 (F,G,US). The unpublished plates have been cited by Fryxell, Madroño **21**: 168. 1971. **Phymosia rosea* (DC.) Kearney, Leaf. W. Bot. **5**: 190. 1949.
- M. rotundifolium* A. Gray, Proc. Amer. Acad. Arts **7**: 333. 1868. TYPE: California: sand hills at Fort Mohave, *Cooper s.n.* (Holotype: GH; isotype: K, US!). **Eremalche rotundifolia* (A. Gray) Greene, Leaf. Bot. Observ. Crit. **1**: 208. 1906.
- M. ruderale* Hance ex Walpers. **Malvastrum coromandelianum* (L.) Garcke subsp. *coromandelianum*. See text.
- M. rugelii* S. Watson. **Malvastrum corchorifolium* (Desr. in Lam.) Britton ex Small. See text.
- M. rugosum* Philippi, Anales Mus. Nac. Chile Bot. **2**: 9, 1891. See *M. pediculariifolium* var. *rugosum* above. **Nototriche rugosa* (Phil.) A. W. Hill.

- M. rusbyi* Britton, Bull. Torrey Bot. Club **16**: 64. 1889. TYPE: Bolivia: Near La Paz, alt. 10,000 ft. *Rusby 1780* (Lectotype: NY; isotypes: MICH! ND, PH! US!). **Tarasa capitata* (Cav.) Bates, Gentes Herb. **9**: 388. 1965.
- M. sajamense* Hieronymus, Bot. Jahrb. Syst. **21**: 319, 1896. TYPE: Peru: Dep. Tacna. Tacora mountains, alt. 4500–4800 m, *Stübel 108* (Holotype: B (lost); isotype: K). **Nototriche sajamensis* (Hieron.) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. saltense* Hieronymus ex O. Kuntze, Rev. Gen. 3, **2**: 22. 1898, nomen nudum, non Hieron. ex Fries 1905. Later named **Nototriche saltensis* A. W. Hill, Bot. Jahrb. Syst. **37**: 587. 1906, based on *Hieronymus & Niederlein 41*.
- M. saltense* Hieronymus ex R. E. Fries, Nova Acta Regiae Soc. Sci. Upsal. ser. 4, **1**: 127. 1905, non Hieron. ex O. Ktze., 1898, nomen nudum. This name was attributed to K. Schumann by Hill (1909b), who stated that it applied to **Nototriche anthemidifolia* (Remy) A. W. Hill, Bot. Jahrb. Syst. **37**: 578. 1906.
- M. sandemannii* Sandwith, Kew Bull.: 263. 1950. TYPE: Peru: Dep. Arequipa. Chala, alt. 500 m. *Sandemann 4020* (Holotype: K!; isotype: OXF!). **Modiolastrum sandemannii* (Sandw.) Hill & Fryxell, Brittonia **32**(4): 484. 1980.
- M. scabrosum* (Linnaeus) Stapf, Bot. Mag. **151**: t. 9087. 1925. Basionym: *Malva scabrosa* Linnaeus, Cent. 2 Plant.: 27. 1756. TYPE: Lectotype chosen by Bates (1969) is t. 86, Commelin, Horti Medici. Amstelod. descr. 171, t. 86. 1701. **Anisodontea scabrosa* (Linnaeus) Bates, Gentes Herb. **10**: 368. 1969.
- M. scabrum* (Cavanilles) A. Gray. **Malvastrum tomentosum* (L.) S. R. Hill. See text.
- M. scabrum* var. *amblyphyllum* (R. E. Fries) Hassler. **Malvastrum amblyphyllum* R. E. Fries. See text.
- M. scabrum* var. *genuinum* Hassler. The typical variety. **Malvastrum tomentosum* (L.) S. R. Hill. See text.
- M. scabrum* var. *paraguariense* Hassler. **Malvastrum amblyphyllum* R. E. Fries. See text.
- M. scabrum* var. *tucumanense* Hassler. **Malvastrum amblyphyllum*. See text.
- M. schaffneri* S. Watson, Proc. Amer. Acad. Arts **25**: 143. 1890. TYPE: Mexico: Est. Coahuila. Carneros Pass, *Pringle 2849* (Lectotype: GH; isotypes: BKL! F! NY! US! VT!). **Kearnemalvastrum subtriflorum* (Lag.) Bates, Brittonia **19**: 232. 1967.

**M. scoparioides* Ulbrich. *See text.*

M. scoparium (L'Heritier) A. Gray. **Malvastrum tomentosum* (L.) S. R. Hill. *See text.*

M. scorpioides (O. Kuntze) K. Schumann, Bot. Jahresber. (Just) **26**: 355. 1898. Basionym: *Malveopsis scorpioides* O. Kuntze, Rev. Gen. 3, **2**: 22. 1898. TYPE: Bolivia: Río Tapacari, alt. 3000 m., (?) Kuntze s.n. (Holotype: NY!; isotype: US!). This is a *Tarasa*, but Krapovickas (1954, p. 142) has not assigned it to a species in that genus due to its lack of mature fruits.

M. setosum Harvey in Harvey & Sonder, Fl. Cap. **1**: 163. 1860. TYPE: South Africa: Piquetberg Dist. At Piquetberg near Groenvalei, alt. less than 1000 ft., Drége 7231 (Lectotype: K; isotypes: G!, L, MO, P). **Anisodonteia setosa* (Harvey) Bates, Gentes Herb. **10**: 344. 1969.

M. shepardae I. M. Johnston, Contr. Gray Herb. n. s. **70**: 75. 1924. TYPE: Peru: in meadows, Puno, alt. 3125 m., Shepard 123 (Holotype: GH). **Urocarpidium shepardae* (I. M. Johnst.) Krap., Darwiniana **10**: 621. 1954.

M. spicatum (Linnaeus) A. Gray. **Malvastrum americanum* (L.) Torrey in Emory. *See text.*

M. spicatum var. *mollissima* Chevalier. **Malvastrum americanum* (L.) Torrey in Emory. *See text.*

**M. spiciflorum* (Hassler) Krapovickas. *See text.*

M. splendidum Kellogg, Proc. Calif. Acad. Sci. **1**: 67. 1855. *See M. fasciculatum* var. *laxiflorum*. **Malacothamnus fasciculatus*. (Nutt. ex Torr. & Gray) Greene var. *laxiflorus* (A. Gray) Kearney.

M. splendidum sensu Davidson, Erythea **4**: 68. 1896. **Malacothamnus davidsonii* (Robinson) Greene, Leaflet Bot. Observ. Crit. **1**: 208. 1906. *See M. davidsonii* above and *M. splendidum* below.

M. splendidum Davidson ex Robinson in A. Gray, Syn. Fl. N. Am. **1**, **1**: 312. 1897, pro syn., nom. nud. **Malacothamnus davidsonii* (Robinson) Greene. *See M. davidsonii* and *M. splendidum* above.

M. stenopetalum A. Gray, Bot. U. St. Expl. Exped. **1**: 155. 1854. TYPE: Peru: Dep. Lima. Alpine Cordilleras near Casa Cancha, Pickering s.n. (Holotype: US). **Nototriche stenopetala* (A. Gray) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.

- M. stipulare* Philippi, Anales Mus. Nac. Chile Bot. **2**: 8. 1891. TYPE: Chile: Prov. Tarapacá, Machuca, alt. 3200 m, *Philippi s.n.* (Holotype: SGO no. 52009; isotype: GH). This is a *Nototriche*, but has not been studied in detail.
- M. strictum* (Jacquin) Gray & Harvey in Harvey & Sonder, Fl. Cap. **1**: 161. 1860. Basionym: *Malva stricta* Jacquin, Hort. Schoenbr. **3**: 24, t. 294. 1789. TYPE: t. 294 was chosen as lectotype by Bates (1969, p. 370). **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.
- M. stuebellii* Hieronymus, Bot. Jahrb. Syst. **21**: 318. 1896. TYPE: Peru: Dep. Cajamarca. Near Cajamarca, monte Altura de Santa Ursula, *Stübel* 38 (Holotype: B (lost) — photo Field Mus. ser. no. 9325 — F!). **Acaulimalva stuebelii* (Hieron.) Krap., Darwiniana **19**: 34. 1974.
- M. subacaule* (Philippi) E. G. Baker, J. Bot. **32**: 36. 1894. Basionym: *Malva subacaulis* Philippi, Anales Univ. Chile **82**: 14. 1893, non Coss. ex Baker, J. Bot. **28**: 340. 1890. See *M. humile* var. *subacaule* above. **Tarasa humilis* (Gill. ex Hook. & Arn.) Krap.
- M. subtriflorum* (Lagasca) Hemsley, Biol. Centr. Am. Bot. **1**: 100. 1879. Basionym: *Malva subtriflora* Lagasca, Elenchus Pl.: 21. 1816. TYPE: Plant cultivated at the Royal Botanic Garden Madrid, seeds sent by Sessé (Holotype: presumably MA). **Kearnemalvastrum subtriflorum* (Lag.) Bates, Brittonia **19**: 232. 1967.
- M. sulphureum* (Gillies ex Hooker & Arnott) Grisebach, Abh. Königl. Ges. Wiss. Göttingen **24**: 43. 1879 ("sulfureum"). Basionym: *Malva sulphurea* Gillies ex Hooker & Arnott, Bot. Misc. **3**: 149. 1833. TYPE: Argentina: Mendoza, roadside and about houses, *Gillies s.n.* (Holotype: K; isotype: OXF!). **Malvella leprosa* (Ort.) Krap., Bonplandia **3**: 59. 1970.
- M. tarapacatum* (Philippi) E. G. Baker, J. Bot. **28**: 371. 1890, nomen nudum. A combination based on the nomen nudum *Malva tarapacana* Philippi ex E. G. Baker, J. Bot. **28**: 371. 1890. See *M. tarapacatum* below.
- M. tarapacatum* (Philippi) E. G. Baker, J. Bot. **29**: 167. 1891. A new combination made valid by the publication of the basionym: *Malva tarapacana* Philippi, Anales Mus. Nac. Chile Bot. **2**: 8. 1891. TYPE: Chile: Prov. Tarapacá, Jaiña, *Rahmer s.n.* (Lectotype: SGO no. 41025; isotypes: B (lost) — photo Field Mus. ser.

- no. 9326 — F! G! K, SGO no. 51990). **Tarasa tarapacana* (Philippi) Krap., Bol. Soc. Argent. Bot. **5**: 121. 1954.
- M. tenellum* (Cavanilles) Hieronymus, Bol. Acad. Nac. Ci. **4**: 16. 1881. Basionym: *Malva tenella* Cavanilles, Icones Pl. **5**: 14, t. 422, f. 3. 1799. TYPE: Chile: Cordillera, ?Nee (Holotype: presumably MA). **Tarasa tenella* (Cav.) Krap., Bol. Soc. Argent. Bot. **5**: 123. 1954, based upon t. 422, f. 3.
- M. tenuifolium* E. G. Baker, J. Bot. **28**: 371. 1890. Based on: *Malva tenuifolia* Hooker & Arnott, Bot. Misc. **3**: 150. 1833, non Savi, 1804. Nom. illegit. TYPE: Chile: Prov. Maule, Cuming 841 (Holotype: K). **Sphaeralcea purpurata* (Lindley) Krap., Lilloa **17**: 218. 1949.
- M. thurberi* A. Gray, Mem. Amer. Acad. Arts n.s. 2, **5**: 307. 1855. TYPE: Mexico: Est. Sonora. Valley near Santa Cruz, Thurber, 709 (Holotype: GH — fragment F!; isotypes: F!, GH, MO, NY). **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene subsp. *fasciculatus*, Leaflet Bot. Observ. Crit. **1**: 208. 1906. Bates (1963, ined.) raised some question as to the correct location cited for the type.
- M. thurberi* var. *laxiflorum* A. Gray, Proc. Amer. Acad. Arts **22**: 291, in adn. 1887. See *M. fasciculatum* var. *laxiflorum* and *M. laxiflorum* above. **Malacothamnus fasciculatus* (Nutt. ex Torr. & Gray) Greene var. *laxiflorus* (A. Gray) Kearney.
- M. trachelifolium* (Link) Ulbrich. **Malvastrum americanum* (L.) Torrey in Emory. See text.
- M. tricuspidatum* (R. Brown in Aiton) A. Gray. **Malvastrum coromandelianum* (L.) Garcke. See text.
- M. tricuspidatum* var. *bicuspidatum* S. Watson. **Malvastrum bicuspdatum* (S. Wats.) Rose subsp. *bicuspidatum*. See text.
- M. tricuspidatum* var. *capitato-spicatum* (O. Kuntze) Stuckert. **Malvastrum coromandelianum* (L.) Garcke subsp. *capitato-spicatum* (O. Kuntze) S. R. Hill. See text.
- M. tricuspidatum* var. *congestum* (R. E. Fries) Stuckert. **Malvastrum coromandelianum* (L.) Garcke subsp. *capitato-spicatum* (O. Kuntze) S. R. Hill. See text.
- M. tricuspidatum* var. *normale* (O. Kuntze) Stuckert. **Malvastrum coromandelianum* (L.) Garcke subsp. *coromandelianum*. See text.
- M. tridactylides* (Cavanilles) Gray & Harvey in Harvey & Sonder,

- Fl. Cap. **1**: 162. 1860 (“*tridactylites*”). Basionym: *Malva tridactylides* Cavanilles, Diss. **2**: 73, t. 21, f. 2. 1786. TYPE: South Africa: Cape of Good Hope, *Sonnerat s.n.* (Holotype: MA; isotypes: P, P-LA). **Anisodonteia fruticosa* (Bergius) Bates, Gentes Herb. **10**: 348. 1969.
- M. tridactylides* var. α *glabrum* Harvey in Harvey & Sonder, Fl. Cap. **1**: 162, 1860 (“*glabra*”). TYPE: South Africa: Worcester Dist. In mountains near Tulbagh, *Ecklon & Zeyher* 283 (Lectotype: s). **Anisodonteia fruticosa* (Bergius) Bates, Gentes Herb. **10**: 348. 1969.
- M. tridactylides* var. β *puberulum* Harvey in Harvey & Sonder, Fl. Cap. **1**: 162. 1860 (“*puberula*”). TYPE: South Africa: Swellendam Dist. near Hassaquaskloof and Breederivier, *Ecklon & Zeyher* 292 (Lectotype: s; isotypes: C, G!, K, L, MO, NBG, P, S). **Anisodonteia fruticosa* (Bergius) Bates, Gentes Herb. **10**: 348. 1969.
- M. tridactylides* var. *setosum* (Harvey) Garcke, Bot. Zeitung **22**: 11. 1864. Basionym: *Malvastrum setosum* Harvey in Harvey & Sonder, see above. **Anisodonteia setosa* (Harvey) Bates, Gentes Herb. **10**: 344. 1969.
- M. tridactylides* var. γ *stellulatum* Harvey in Harvey & Sonder, Fl. Cap. **1**: 162. 1860 (“*stellulata*”). TYPE: South Africa Swellendam Dist. near Hassaquaskloof and Breederivier. *Ecklon & Zeyher* 292 (Neotype: s; isotypes: C, G, K, L, MO, NBG, P, S). See discussion in Bates, (1969, p. 348). **Anisodonteia fruticosa* (Bergius) Bates, Gentes Herb. **10**: 348. 1969.
- M. trilobatum* E. G. Baker, J. Bot. **29**: 164, 1891. TYPE: South Africa: Cape Province. George Distr., *Alexander & Prior s.n.* (Holotype: BM; isotype: K). **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.
- M. trilobum* (Thunberg) Garcke, Bot. Zeitung **22**: 11. 1864. Basionym: *Malva triloba* Thunberg, Prodr. Pl. Cap.: 118. 1800, non Cavanilles, 1803. TYPE: South Africa: Karro and Cannaland, *Thunberg s.n.* (Holotype: UPS — microfiche no. 16019). **Anisodonteia triloba* (Thunb.) Bates, Gentes Herb. **10**: 363. 1969.
- M. tuberculatum* A. W. Hill, Kew Bull.: 486. 1933. TYPE: Argentina: Prov. Catamarca, Dep. Andalgalá, *Jørgensen* 1346 (Holotype: K!; isotype: BA, GH). **Acaulimalva nubigena* (Walpers) Krap., Darwiniana **19**: 22. 1974.

- M. tweedii* E. G. Baker, J. Bot. **29**: 169. 1891. TYPE: Uruguay, *Tweedie s.n.* (Holotype: K). **Modiolastrum malvifolium* (Griseb.) K. Schumann in Martius, Fl. Bras. 12, **3**: 277. 1891.
- M. ulophyllum* A. Gray, Bot. U. St. Expl. Exped. **1**: 150. 1854. TYPE: Peru: Alpine Cordilleras at Alpamarca near the snow line, *Pickering s.n.* (Holotype: US no. 15211!). **Nototriche ulophylla* (A. Gray) A. W. Hill, Bot. Jahrb. Syst. **37**: 579. 1906.
- M. urbanianum* Ulbrich, Bot. Jahrb. Syst. **42**: 119. 1909. TYPE: Peru: Prov. Sandia above Cuyocuyo, alt. 3600–3800 m., *Weberbauer 927* (Holotype: B (lost) - photo Field Mus. ser. no. 9327 — F!; isotype: USM). **Tarasa urbaniana* (Ulbrich) Krap., Bol. Soc. Argent. Bot. **5**: 140. 1954.
- M. violaceum* (Philippi) Hieronymus, Bol. Acad. Nac. Ci. **4**: 15. 1881. Basionym: *Malva violacea* Philippi, Anales Univ. Chile **35**: 162. 1870. TYPE: Argentina: Mendoza, *Philippi s.n.* (Holotype: SGO no. 41008). **Sphaeralcea brevipes* (Phil.) Krap., Lilloa **17**: 196. 1949.
- M. virgatum* (Murray) Gray & Harvey in Harvey & Sonder, Fl. Cap. **1**: 162. 1860. Basionym: *Malva virgata* Murray, Comment. Soc. Regiae Sci. Gott. **2**: 20, t. 6. 1779. TYPE: Cultivated specimen from Hort. Cliffordianus (Holotype: BM — Clifford Herbarium). **Anisodonteia capensis* (L.) Bates, Gentes Herb. **10**: 327. 1969.
- M. virgatum* sensu Gray & Harvey in Harvey & Sonder, Fl. Cap. **1**: 162. 1860, excl. basionym. **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.
- M. virgatum* var. β *angustifolium* Harvey in Harvey & Sonder, Fl. Cap. **1**: 162. 1860 (“*angustifolia*”). See *M. angustifolium* (Harvey) Stapf ex Fourcade above. **Anisodonteia scabrosa* (L.) Bates.
- M. virgatum* var. α *dillenianum* (Ecklon & Zeyher) Harvey in Harvey & Sonder, F. Cap. **1**: 162. 1860 (“*dilleniana*”). Basionym: *Malva dilleniana* Ecklon & Zeyher, Enum. Pl. Afr. Aust. Extratrop.: 36. 1834. TYPE: Bates (1969) selected f. 206 in Dillenius, Hort. Eltham. 2: 108, t. 169, f. 206. 1732. **Anisodonteia capensis* (L.) Bates, Gentes Herb. **10**: 327. 1969.
- M. virgatum* var. α *dillenianum* sensu Harvey in Harvey & Sonder, Fl. Cap. **1**: 162. 1860, excl. basionym. **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.

- M. virgatum* var. *oblongifolium* Harvey in Harvey & Sonder, Fl. Cap. **1**: 162. 1860. TYPE: South Africa: *Drège 7318b* (Holotype: K; isotypes: MO, P). **Anisodonteia scabrosa* (L.) Bates, Gentes Herb. **10**: 368. 1969.
- M. viscidum* Abrams, Bull. Torrey Bot. Club **34**: 264. 1907. See *M. densiflorum* var. *viscidum* above. **Malacothamnus densiflorus* (S. Wats.) Greene var. *viscidus* (Abrams) Kearney.
- M. vitifolium* (Cavanilles) Hemsley, Biol. Centr. Am. Bot. **1**: 100. 1879. Basionym: *Malva vitifolia* Cavanilles, Icon. Pl. **1**: 13, t. 20. 1791, non Cervant. ex Steud, 1841, nom. nud. TYPE: Cultivated plant at the Royal Botanic Garden Madrid (Holotype: MA — photo BH neg. 15651 and US neg. 451). **Kearnemalvastrum lacteum* (Ait.) Bates, Brittonia **19**: 231. 1967.
- M. waltheriifolium* (Link) Ulbrich. **Malvastrum tomentosum* (L.) S. R. Hill. See text.
- M. weberbaueri* Ulbrich, Bot. Jahrb. Syst. **42**: 115. 1909. TYPE: Peru: Dep. Ancash. Prov. Cajatambo, above Ocros in fields, alt. 3500–3600 m, *Weberbauer 2760* (Holotype: B (lost) — photo Field Mus. ser. No. 9328 — F!, fragment of holotype at K!; isotypes: G! MOL). **Acaulimalva weberbaueri* (Ulbr.) Krap., Darwiniana **19**: 35. 1974.
- M. wilczekii* Hochreutiner var. *genuinum* Hochreutiner, Annuaire Conserv. Jard. Bot. Genève **21**: 424, f. 26. 1920. TYPE: Argentina: Prov. Mendoza, San Rafael, *Wilczek 290* (Holotype: G! — photo Field Mus. ser. no. 23737 — F!; isotype: LAU!). **Sphaeralcea mendocina* Philippi, Anales Univ. Chile **2**: 392. 1862.
- M. wilczekii* var. *macrocarpum* Hochreutiner, Annuaire Conserv. Jard. Bot. Genève **21**: 426. 1920. TYPE: Argentina: Prov. Mendoza, San Rafael, *Wilczek 289* (Holotype: G; isotype: LAU!). **Sphaeralcea mendocina* Philippi, Anales Univ. Chile **2**: 392. 1862.
- M. wrightii* A. Gray. **Malvastrum aurantiacum* (Scheele) Walpers. See text.